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EDITED BY GURNEY WILSON, F.L.S.

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MISSOURI BOTANICAL GARDEN
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PANTIA RALLI, ESQ.,

ASHTEAD PARK, SURREY,

AN ENTHUSIASTIC AND HIGHLY SUCCESSFUL

AMATEUR OF ORCHIDS,

THIS THIRTIETH VOLUME OF THE "ORCHID REVIEW"

IS CORDIALLY DEDICATED.

THE ORCHID REVIEW.

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NOTES.

TITLE PAGE.—Owing to an omission in the wording of the title page included in our last issue, it is requested that the one contained in the present number be substituted for it when binding the volume for 1921.

"ORCHID REVIEW" SUBSCRIPTION FOR 1922.—On account of a slight decrease in the cost of production, the subscription rate of the "Orchid Review" for the year 1922, will be reduced to twelve shillings, post free.

STANHOPEA MINOR.—This new species was imported in 1907 by Mr. Grossmann from South Brazil, and the example in the Botanic Garden at Dahlem has been described by Dr. R. Schlechter (*Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem*, Jan., 1917). It is allied to S. oculata, Ldl., and the flowers are small for the genus. The sepals and petals are creamy white, thickly spotted with purple; at the base of the petals are two dark purple spots. The labellum has an eye-like blotch of purple on each side of the hypochile, while the mesochile and epichile are white with light reddish spotting. An illustration of the flower is accompanied by diagrams of the labellum, anther, and pollinia.

CATTLEYA LABIATA ALBINOS.—With the intention of raising a batch of Cattleya labiata having white sepals and petals, Mr. Richd. G. Thwaites crossed two varieties possessing these characteristics. The seed bearer was C. labiata R. I. Measures, a white variety with a pink tinge on the labellum, and the pollen parent was C. labiata Amesiana, also white, but with a lilac tinge on the labellum. The experiment, which was made some years ago, proved unsuccessful, for all the resulting seedlings, numbering several hundreds, produced, without exception, typically-coloured flowers. At a later date it was decided to attempt the raising of a batch of richly-coloured varieties, and for this purpose C. labiata Blenheim variety was fertilised with its own pollen. One of the first of these seedlings has just

flowered, and, instead of being rich rose-purple, is, strange to relate, pure white, excepting a faint mauve tint on the front lobe of the labellum. Mr. Thwaites writes that as there is always a possibility of an error creeping in, the records have been examined most carefully, and there is nothing that could produce such a seedling as this except the above-mentioned parent. Although the flower reminds one of C. labiata Amesiana, there is no doubt whatever that it is a seedling from C. labiata Blenheim variety self-fertilised, so we have named it C. labiata Blenheim alba. A second seedling has since flowered, and is coloured like its parent, so both purple and white varieties are being produced from the same seed-pod.

VANDANTHE TATZERI.--This interesting hybrid between Vanda tricolor and Euanthe Sanderiana (Vanda Sanderiana) was raised by Mr. A. Tatzer in the Botanic Garden of Prague University. The cross was made in 1909, and the plant produced its first spike of seven flowers in August, 1919. It is described in the *Orchis*, Oct., 1919, the flowers being intermediate in character, as is the case with most primary hybrids. On account of structural differences in the flower, Dr. Schlechter in 1914 separated Vanda Sanderiana and made it the type plant of the new genus Euanthe. This explains the termination of the generic name of the present hybrid, which, having regard to the creation of the above new genus, must be considered of bi-generic character.

RAPID CULTIVATION OF CATTLEYAS.—Recent results in the cultivation of Cattleyas show that these plants can be grown very quickly, provided they obtain the essential atmospheric conditions. Warmth and humidity always encourage the production of growth, but to obtain flowers of high quality, bright light in the way of diffused sunshine, is an equal necessity. Although the season of 1921 will long be remembered for its continuity of fine weather, much of the benefits derived therefrom were brought about by the skilful way in which these factors were utilised by the cultivator. In the rapid cultivation of Cattleyas, much success has been achieved by Messrs. Hassall & Co., and among them an example of Cattleya Hardyana alba, is worthy of being placed on record. The plant started into growth during the autumn of 1920, and completed the bulb in the early part of 1921. From this bulb another was made in the summer of 1921, and a third followed in the early autumn of the same year. On the completion of each of these consecutive bulbs, sheaths were duly formed, but they did not produce any flower buds until October 1921, when all three bulbs came into flower simultaneously, These plants were one of the features of Messrs. Hassall's group at the R.H.S. Autumn Show, held on November 1st, 1921.

IS THE TWISTING OF THE OVARY IN ORCHIDS A SATISFACTORY CHARACTER FOR SYSTEMATIC DIFFERENTIATION?

BY COLONEL M. J. GODFERY, F.L.S.

THE twisting of the ovary is widely employed as a distinguishing generic character. Ascherson & Græbner (*Syn. Fl. Mitt. Eur.*), include it in the diagnoses of Orchis, Aceras, Gymnadenia and many other genera, and its absence as a character in Nigritella, Epipogon, etc. Rouy (*Fl. de France*) not only uses it in a generic sense, but also as a character to differentiate the sub-tribe Physurinæ (ovary not twisted), from the Spiranthinæ (ovary visibly twisted). It is thus given all the force of a genuine morphological character of generic, sometimes even of higher, value.

It may be remarked incidentally that it is not always easy to say whether the ovary is twisted or not. Reichenbach, fil., says of Goodyera, ovary twisted in flower, whilst Rouy says ovary not twisted. This discrepancy is probably not due to defective observation, but to lack of examination of a sufficiently wide range of specimens. I recently examined examples of Goodyera repens and found some ovaries markedly twisted, some slighty twisted and a few straight. Ascherson and Græbner made a similar observation with respect to Spiranthes autumnalis (*Syn.* iii., 885) ———"ovaries . . . . mostly sessile, somewhat twisted, but when in the lower flowers the stalk is somewhat lengthened, then the stalk, not the ovary, is twisted."

From this it is clear that in the case of Goodyera and Spiranthes the twisting of the ovary is of no value as a generic, still less as a sub-tribal character———twisted and straight ovaries can be found on the same spike. The twisting of the ovary is a biological function reversing the flower (which is originally lip upwards), causing the lip to point downwards, so as to form a convenient platform for insects to alight on. Untwisted ovaries may be due to one of two causes. First, it may be unnecessary for the flower to be reversed so as to bring the lip downwards. Thus in Nigritella, which is fertilised by butterflies, the viscid disc to which the pollinia are attached adheres to the *under* side of the side of the insect's proboscis, and in Epipogon, visited by Bombus lucorum, the bee alights on the column, the viscid disc becoming fixed to the under surface of its body. These cases are rare and exceptional. Secondly, when an ovary is stalked, the stalk, owing to its slenderness, twists much more easily than the ovary, and there is no need for the latter to twist. When the ovary is sessile, it must do all the twisting required. The phrase "ovary twisted" is, in fact, in most cases only another way of saying that the ovary is sessile, a character which would hardly be considered of generic importance.

The twisting of the ovary occurs, not only in terrestrial, but also in

epiphytic Orchids, when these have an upright inflorescence, but if the latter is pendent, as in Stanhopea Devoniensis, no twisting takes place, as the lip is already pointing downwards. If, however, a young spike of Stanhopea be fixed in an erect position, the ovaries will twist in 24 hours (*Kerner, Pflanzenleben*, ii. 224). It would be an interesting experiment to see whether terrestrial Orchids, if placed with the spike in a reversed position, would refrain from twisting their ovaries.

The twisting of the ovary is not a genuine morphological character, but a biological function securing the correct position of the flower in respect to visiting insects. It appears to be of little, if any, value from a systematic oint of view.

ORCHID COLLECTING IN THE EAST.

BY T. SOHMA, TOKYOFU, JAPAN.

LEAVING my home about the middle of February, 1921, I travelled through Shanghai, Hongkong, Canton, the Philippine Islands, British North Borneo, Singapore, Burma, India and Java, the journey occupying over six months. While in the Philippines I went to Tayabas Province, a famous locality for Phalænopsis Schilleriana. Here there is thick virgin forest, and many savage people, called Ayetas, live in the jungle. The Ayetas are one of the lowest classes among over sixty tribes in the Philippines. They are a small black people, always naked, and they live in houses made of palm leaves and constructed on the branches of high trees. By means of the primitive wooden bow they shoot animals with hateful poison. A few years ago, an American dealer of Philippine Orchids was killed in the jungle by their fearful shooting when collecting Phalænopsis Schilleriana and P. leucorrhoda. I went into the virgin forest with my attendant, two guides and several Ayetas, and also collected these Phalænopsis, as well as P. amabilis, P. Lueddemanniana, and others.

The Ayetas climb up any high tree, just like monkeys, so long as there are strong vines hanging from it. They do not require money in return for their work, but want rice, tobacco, spirits, matches and red cloth. And this because they do not know how to use money or even to count any numbers. My guide told me that if a man could calculate the numbers from one to ten he is considered a great and wise person among them.

I found that Phalænopsis Schilleriana is now very scarce in this locality, and will probably become more so in the near future. When climbing up the mountain, about 8,000 feet high, I saw Cypripedium Argus, Dendrobium Victoria Reginæ, many kinds of Cœlogynes, Dendrochilums, Aërides, and others. On the lower part of this mountain there are many Dendrobiums, such as D. superbum, D. aureum philippinense, and Cypripedium

Haynaldianum. In another place I collected Vandas, Aërides and Dendrobiums. In Mindanao and British North Borneo I could not go to the deep jungle, but I obtained Vanda Sanderiana, Phalænopsis Sanderiana and Aërides Savageanum in the former place. When in Burma I collected many kinds of the Orchids seen growing on high trees, including Vandas and Aërides, while on the ground I found Cypripediums.

At the time of my visit, Dendrobium chrysotoxum, D. formosum, D. Pierardii and D. Devonianum were flowering profusely in the jungle. Others also in bloom and equally effective were Aërides affine, Saccolabium curvifolium, Vanda Bensonii and V. Parishii, as well as many species of botanical interest. The sight of these Orchids flowering naturally was to me an indescribable picture of elegance and beauty. And especially so was Phalænopsis Schilleriana in the thick jungle.

In northern India, at an elevation of 3-4,000 feet, many botanical species were flowering in the forest. A beautiful Cœlogyne had flowers as white as the Himalayan snow. I visited Darjeeling (6,800 feet), but time did not permit me to go as far as Sikkim. When visiting Java I collected many flowering plants of Vanda tricolor, also Phalænopsis grandiflora, as well as Bulbophyllums. Unfortunately, a telegram calling me home prevented my intended visit to the Sarawak side of Dutch Borneo and to New Guinea.

The plants collected by me were despatched to the Japanese Imperial Garden and my own home. On my return I at once went to my greenhouse in the garden and inspected the Orchids that had arrived from England during my absence. I cannot express my pleasure in finding how healthy they all were, continually making new growths. Not a single one was lost.

MOVEMENTS OF THE POLLINIA.—The pollinia of many Orchids undergo a movement of depression, after they have been removed from their places of attachment and have been exposed for a few seconds to the air. This is due to the contraction of a portion, sometimes to an exceedingly minute portion, of the exterior surface of the rostellum, which retains a membranous condition. This membrane is likewise sensitive to a touch, so as to rupture in certain definite lines. In a Maxillaria the middle part of the pedicel, and in Habenaria the whole drum-like pedicel, contracts. The point of contraction in all the other cases seen by me, is either close to the surface of attachment of the caudicle to the disc, or at the point where the pedicel is united to the disc; but both the disc and pedicel are parts of the exterior surface of the rostellum. In these remarks I do not refer to the movements which are simply due to the elasticity of the pedicel, as in the Vandeæ.—CHAS. DARWIN, in "*Fertilization of Orchids.*"

NEW HYBRIDS.

HYBRID.	PARENTAGE.	EXHIBITOR.
Brassolaeliocattleya Camada ...	Lc. Artemis × Bc. Mrs. J. Leemann .	Charlesworth.
Brassolaeliocattleya Mrs. Alwyn Harrison	Lc. rubens × Bc. Mrs. J. Leemann ...	C. A. Harrison.
Cattleya Miss Phyllis Marshall	Clarkiae × labiata	F. J. Hanbury, Esq.
Cymbidium Hebe	erythrostylum × Pauwelsii	Sanders.
Cypripedium Asion	Queen Alexandra × aureum Oedippe ..	Charlesworth.
Cypripedium Duchess of Marlborough	Lord Ossulston × Leeanum	Duke of Marlborough.
Cypripedium Evulston	Lord Ossulston × Eve	P. Smith, Esq.
Cypripedium Fairville	Fairrieanum × Earl of Tankerville	P. Smith, Esq.
Cypripedium Hilda Walker ...	King George V. × Hera Euryades	Mrs. Bruce and Miss Wrigley.
Cypripedium Joyce Hanmer ...	Earl of Tankerville × fulshawense	A. Hanmer, Esq.
Cypripedium Osprey	Lucifer × Caractacus	Sir Geo. Holford.
Cypripedium Sincerity	Reginald × Lord Wolmer	Sanders.
Miltonia Lena	vexillaria superba × Charlesworthii	Charlesworth.
Odontioda Alva	Oda. Wilsonii × O. Harryanum	Charlesworth.
Odontioda Cora	Oda. Coronation × O. eximium	Charlesworth.
Odontioda Enchantress	O. harvengtense × Oda. Madeline	McBean.
Odontioda Hera	Oda. Lambeauiana × O. amabile	Charlesworth.
Odontioda Lakonia	O. Aireworth × Oda. Cooksoniae	Charlesworth.
Odontioda Priola	O. Rolfeae × Oda. Madeline	Charlesworth.
Odontioda Sheila	O. Aireworth × Oda. Chanticleer	Charlesworth.
Odontioda Zillah	O. Jasper × Oda. Diana	Charlesworth.
Odontoglossum Beryl	Uro-Skinneri × Amethyst	Charlesworth.
Odontoglossum Helvetia	crispo-Harryanum × Maillardianum	Charlesworth.
Odontoglossum Seraphis	eximium × Dusky Monarch	Charlesworth.
Odontoglossum The Prince	Colossus × Doris	Charlesworth.
Odontoglossum Viola	Dreadnought × Colossus	Armstrong & Brown.
Odontoglossum Watsonii	Aireworth × Maillardianum	Armstrong & Brown.
Odontonia ardens	Otn. Louise × O. amabile	Charlesworth.
Odontonia Bleu-ardent	M. Bleuana × O. ardentissimum	Charlesworth.
Odontonia Stella	O. Ashworthianum × M. Bleuana ...	Charlesworth.
Oncidioda Pallas	On. tigrinum × C. Noezliana	Charlesworth.
Oncidium Burgeffianum	varicosum Rogersii × Marshallianum	Dr. Burgeff.
Sophrolaeliocattleya Pink Pearl	Sl. heatonensis × C. Gaskelliana	Mansell & Hatcher.
Sophrolaeliocattleya Renown ...	Slc. de Vere Beauclerk × C. illustris	Pantia Ralli, Esq.
Vanda Herziana	coerulea × suavis	P. Herz.
Vanda Mariannae	tricolor × Denisoniana	A. Tatzer.
Vandanthe Tatzeri	tricolor × Euanthe Sanderiana	A. Tatzer.
Vuylstekeara Adonis	M. Warscewiczii × Oda. Madeline ...	Charlesworth.
Vuylstekeara Edna	Mta. Harwoodii × Oda. Charlesworthi	Charlesworth.
Vuylstekeara Felicia	M. Warscewiczii × Oda. Felicia	Charlesworth.

ODONTOGLOSSUM HYBRIDS.—The new edition of Sanders' List of Orchid Hybrids includes over 800 different crosses of this genus, to which may be added about 60 Odontonias (Miltonia × Odontoglossum), and a dozen Odontocidiums (Odontoglossum × Oncidium).

R.H.S. AUTUMN EXHIBITION.—The Council of the Royal Horticultural Society has arranged for a four days' show at the Holland Park Skating Rink from Tuesday, October 3rd, until Friday evening, October 6th. This exhibition will take the place of the usual Holland House show held in July. Two Orchid Challenge Cups will be awarded to amateurs.

LÆLIA ANCEPS AND ITS VARIETIES.

LÆLIA anceps was originally described and figured in 1835, from a plant which flowered in the establishment of Messrs. Loddiges, of Hackney. Dr. Lindley remarked: "When we say that this plant is equal in beauty to

LÆLIA ANCEPS CHAMBERLAINIANA, CULTIVATED BY MR. H. G. ALEXANDER, IN THE COLLECTION OF LIEUT.-COL. SIR GEORGE HOLFORD, K.C.V.O., WESTONBIRT, TETBURY, GLOS.

any of the Cattleyas; that it has a far more graceful mode of growth, in consequence of the length of its slender scaly stems, from the point of which the flowers swing; and that it diffuses an agreeable fragrance, we shall have said that it is one of the most interesting of the tribe that has yet

made its appearance." In the typical form the sepals and petals are rose-purple, the lip much darker and the throat pencilled with radiating purple lines on a lighter ground.

It is within the memory of the older Orchid growers that several distinct Cattleyas were classified as forms of C. labiata; the early text books mention C. labiata Mossiæ, C. labiata Trianæ, and C. labiata Mendelii, but to-day these plants are recognised as distinct species, what C. labiata is to South America, L. anceps is to Mexico, and the latter, although in a smaller area, is almost more variable. Many years' study of Lælia anceps led Mr. de Barri Crawshay to the conclusion that a number of so-called varieties of this Mexican plant are no more to be considered as its varieties than are the various forms of C. labiata mentioned above.

TYPICAL VARIETIES OF LÆLIA ANCEPS.

BARKERIANA (*Lindl. Bot. Reg.*, t. 1947), differs from the type in having the petals very little broader than the sepals. It flowered in the collection of Mr. G. Barker, of Birmingham.

SCOTTIANA (*Will. Orch. Alb.*, vii. t. 325), a good form of the type, with the flowers a little darker than usual.

OBSCURA (*Will. Orch. Gr. Man.*, ed. 7, p. 430), is described as having long dark-coloured sepals and petals, the former white at the base, and the front lobe of the lip deep purple.

LINEATA (*Gard. Chron.*, 1895, ii., p. 734), is a richly coloured form, the basal halves of the sepals white, with some clearly defined chocolate lines. It appeared in the collection of Lord Rothschild, at Tring Park.

PROTHERŒANA (*Gard. Chron.*, 1896, i., p. 40) is a brilliantly coloured form, the sepals and petals white at the base, and the petals with a crimson flush on the upper halves. It flowered in the collection of Mr. Joseph Broome, of Llandudno.

GRANDIFLORA (*Will. Orch. Gr. Man., ed.* 6, p. 351) is typical in form and colour, but has larger flowers.

LEUCOSTICA (*Gard. Chron.*, 1885, i., p. 206) is a rosy form, with the petals irregulary streaked with white. It flowered in the collection of Mr. Greenfield, of Dunstable.

RADIANS (*Gard. Chron.*, 1888, i., p. 298) resembles the preceding, but has a white space at the base of the sepals and petals.

CHAMBERLAINIANA (*Orch. Rev.*, iii., p. 1) is the largest and finest form known of typical anceps.

ROSEFIELDIENSIS (*Orch. Rev.*, iii. p. 34) is a handsome rose-coloured form, in which the veinings in the throat are very broad and dark.

CRAWSHAYANA (*Journ. of Hort.*, 1895, i., p. 67) is a very large form with unusually broad petals and brilliant colour, having a very square-bladed lip.

OWENIANA (*Gard. Chron.*, 1892, ii., p. 744) is a richly coloured variety, the segments flaked with white. It flowered with Mr. G. D. Owen of Rotherham.

DELICATA (*Will. Orch. Gr. Man., ed.* 6, p. 351) has the sepals and petals white, stained with rosy-purple, and the lip suffused with reddish-purple.

BLANDA (*Gard. Chron.*, 1885, i., p. 206) has white sepals and petals with

LÆLIA ANCEPS DAWSONII.

a light rosy hue, and the front lobe of the lip warm purple. It flowered in a Mr. W. Cobb's collection, at Sydenham.

PERCIVALIANA (*Will. Orch. Alb., vi., t.* 256) has white sepals and petals light rose-purple, the side lobes of the lip tipped with amethyst-purple. It flowered in the collection of Mr. R. P. Percival, of Southport.

HILLIANA (*Gard. Chron.*, 1881, i., p. 168) has the sepals and petals nearly white, and the lip bordered with light rose. It appeared with Messrs. Sanders.

HOLOCHEILA (*Gard. Chron.*, 1891, *i.*, *p.* 426) is a distinct and remarkable peloriate form, in which the lip is entire and petal-like, and in colour rosy-lilac throughout.

ALBA (*Gard. Chron.*, 1879, *i.*, *p.* 10) is an albino, having lost all colour. It is also known as Bull's alba. The variety known as Worthington's alba is exactly similar.

VESTALIS (*Gard. Chron.*, 1880, *i.*, *p.* 126) is a white flower, with purple pencillings on the side lobes of the lip.

MORADA was generally applied to the forms first imported by Messrs. Cowan & Co. from a different locality to that from which the earlier importations came.

RŒBLINGIANA (*Orch. Review, vi. p.* 40) in an interesting peloriate form in which the two petals are imperfect lips.

LÆLIA ANCEPS SUB-SPECIES.

The following are not considered true varieties of L. anceps, but allied or sub-species.

LÆLIA SCHRÖDERÆ.

This was recorded as L. anceps Schröderæ (*Gard. Chron.*, 1887, *i.*, *p.* 72) and takes precedence, being the first to appear of the following plants, all of which belong to the section Schröderæ :—Lælia anceps Amesiana (*Journ. of Hort.*, 1893, *ii.*, *p.* 505, *fig.* 73), L. anceps Ballantineana (*Gard. Chron.*, 1891, *i.*, *p.* 86), L. anceps Crawshayana (*Gard. Chron.*, 1898, *i.*, *p.* 59, *fig.* 22), and L. anceps Schröderæ Theodora (R.H.S., Jan. 26th, 1904).

LÆLIA SCHRÖDERIANA.

L. Schröderiana (*Gard Chron.*, 1885, *i.*, *p.* 342) is quite distinct in form, both of plant and flower, and being a white sub-species with only coloured lines in the tube of the lip, a coloured variation cannot be expected, except, of course, a pure albino.

LÆLIA DAWSONI.

L. Dawsoni (*Gard. Chron.*, 1868, *p.* 27) was the first white form, and appeared in Mr. T. Dawson's collection, at Meadow Bank, Glasgow. It is considered a local species, for every variety that has been seen has the same general form, though there is variation in it, as well as in the blotching of the lip. It is an error to suppose that all plants of Dawsoni have been propagated from one original, for there were many plants of it brought to this country.

LÆLIA SANDERIANA.

L. Sanderiana (*Reichenbachia, ser.* I, *ii. t.* 56) has longer and narrower sepals and petals than Dawsoni, but otherwise resembles it. It is found growing with the plants called Stella (*Will. Orch. Alb., viii., t.* 329).

LÆLIA HOLLIDAYANA.

L. Hollidayana (*Orch. Rev., ii., p.* 74) has a crimson blotch and lines in

the tube of the lip. The following plants are considered varieties of it:—L. anceps Ashworthiana (*Orch. Rev.*, *ii.*, *p.* 63), L. anceps Simondsii (*Orch. Rev.*, *ix.*, *p.* 50), L. anceps waddonensis (*Orch. Rev.*, *vi.*, *p.* 94), L. anceps Hollidayana (*Orch. Rev.*, *x.*, *p.* 52), and L. anceps Hollidayana White Queen.

DIACRIUM BICORNUTUM.

AT the Orchid Committee meeting of the Royal Horticultural Society, held November 29th, Mr. W. J. Kaye showed a photograph of a remarkable specimem of Diacrium bicornutum, growing in Trinidad, and carrying no less than forty-six flower spikes.

This species was originally described and figured in 1834 under the name Epidendrum bicornutum (*Hook. Bot. Mag.*, t. 3332), from a plant which flowered in the collection of Earl Fitzwilliam, at Wentworth. It had been introduced by Messrs. Shepherd of Liverpool, from Trinidad, where it grows on rocks so close to the coast that it must often be sprayed with salt water. Subsequently Sir Robert Schomburgk found it growing on the trunks of trees by the River Bernice in Demerara.

DIACRIUM BICORNUTUM.

Lindley made Diacrium a section of Epidendrum, remarking that the lip of E. bicornutum is not parallel with the column, and has two deep pits on the underside, corresponding with the same number of fleshly elevated triangular plates on the upper side (*Lindl. Fol. Orch. Ep.*, p. 26). Bentham referred the plant to the genus Diacrium, stating that the peculiar bi-cornute labellum which is neither adnate to, nor parallel with the column, gives the flower a very different aspect from that of the true species of Epidendrum, and cannot be included in them without doing violence to the generic characters. (*Journ. Linn. Soc.*, xviii. p. 312).

Diacrium bicornutum delights in an abundance of heat and moisture, and under these conditions in its native home grows with considerable vigour; under artificial conditions success is not easily obtained. The pseudobulbs are hollow, and frequently inhabited by ants.

THE BLETCHLEY PARK COLLECTION.

TWENTY years ago, Bletchley Park, the residence of Sir Herbert Leon, Bart., was noted for its collection of Orchids. A recent visit shows that the old traditions are not only being maintained, but are likely to be surpassed, under the keen supervision of Mr. J. T. Watson, the agent. Within the last two years the Orchid houses have been considerably altered. The interior arrangements are now much better, both as to the welfare of the plants and the more effective display of those in flower. The houses are arranged in a compact block and run north and south. They are divided from the potting sheds, which face north, by a wide, heated corridor, well adapted for plant growing. On the south is a similar corridor separating the larger houses from a lean-to house which receives the maximum amount of sunshine. This latter structure is divided so that warm, intermediate, and cool atmospheres can be maintained, and proves of special value for cultivating Dendrobiums, and sun-loving plants such as Laelia anceps, Odontoglossum citrosmum, O. grande, and various Oncidiums. By a judicious use of sandstone and cement, the walls have been faced with pockets that are highly attractive when filled with ornamental foliage plants. Moreover, this treatment of blank walls maintains the atmosphere in a more equable condition for Orchid growing, on account of the heat radiated and the moisture evaporated therefrom. The edges of the staging are lined with irregular stones, and rendered pretty by the planting of Panicum and Selaginella species.

The first of the large houses is devoted to Odontoglossums. The centre of the floor has been hollowed out and converted into an ornamental tank, which proves most useful in providing an adequate supply of water at a suitable temperature. Suspended from the roof, above the water, is an assortment of Masdevallias, all growing well, and including forms of M. coccinea, Chimaera, demissa, Carderi, melanoxantha and calura. Among them is a fine specimen of Cryptophoranthus Dayana, the curious flowers of which are produced at varying intervals, and though overshadowed by the foliage, excite many comments when pointed out. Although the brown and yellow snake-like coloration is effective, the real attraction of the flowers lies in their remarkable formation. The labellum and petals are invisible, being concealed by the sepals, which are connate at their base and apex, leaving on either side narrow slit-like openings for the entrance and exit of small insects. The Odontoglossums arranged on the side stages include some fine examples of the old Pacho type of O. crispum, obtained in the days when crispums could be more easily procured from that district. The majority of the plants are species, but hybrids are also to be seen. Odontiodas are well represented, and included is a strong plant of Odontonia brugensis with a panicle of purple flowers.

A second large house has been divided, the front portion being used as a flowering house, and the remainder as a resting house, a necessary adjunct in a large collection. In the former the plants are arranged in a half-circle opposite the door, and among them Lc. Bletchley Gem, a handsome hybrid derived from Lc. Bletchleyensis and Lc. rubens, was flowering for the first time. At present the plant is rather dwarf, but the flower is beyond the average size, extremely rich in colour, the sepals and petals deep magenta-rose, the large frilled lip deepest crimson on the front lobe, and with the conspicuous eye-like markings derived from the gigas species contained in the parentage. The Lc. Bletchleyensis parent was originally raised in this collection by the late Mr. Hislop, then head-gardener. Cattleya Pittportia var. Lady Leon, which received an award of Merit, R.H.S., November 1st, 1921, is very attractive. The individual flowers are not large, but few are more perfect in outline, or more conspicuous on account of the intense violet-purple colour of the sepals and petals, and the curious buff shading on the purple-margined lip.

Dendrobium formosum, with its large white and yellow almond-scented flowers, showed to advantage beneath the arching spikes of Dendrobium Phalænopsis Schroderianum. The latter plants are still in good condition, though many were obtained from Messrs. Sanders' importations of thirty years ago. The varieties are very similar to those seen among later arrivals. Vanda cœrulea, the fragrant Oncidium ornithorhynchum, O. bicallosum, and O. Papilio majus were also noticed. Among the Cattleyas are fine varieties of Hardyana and Fabia, as well as Lc. Soulange. Also a fine form of Lc. Schilleriana, a natural hybrid between L. purpurata and C. intermedia, which, although out-classed in shape and colour by present-day hybrids, is well worth including in modern collections, for as grown here with several flowers on the spike, the white rose-tinted sepals and petals make a pleasing contrast to the rich crimson labellum.

Originally this collection was composed largely of species, in fact, at its inception few hybrids were known. Many fine forms of these species still remain, in particular, those of Cattleya Trianæ, C. labiata, C. Warscewiczii and C. Mossiæ. A broad petalled form of C. Mossiæ Wageneri flowered in the summer, as did two large dark-flowered plants of C. Lueddemanniana, in colour quite distinct, but recognizable as that species by the characteristic broad petals and the trumpet-shaped labellum. Numerous plants of Laelia purpurata, referrable to the early importations by their dark labellums and broad petals, give promise of many-flowered spikes next season. Vanda suavis is represented by several plants grown in the warm corridor, and including a fine specimen of V. Kirkii, probably the most distinct and certainly one of the richest coloured forms of V. suavis; it is akin to the variety known as cinnamoneum, but far surpassing it in size and colour.

In addition to the larger flowered Orchids, numbers of the so-called Botanical species are included. Cœlogyne nervosa, with ovoid bulbs, and numerous arching spikes carrying white and ochreous-yellow flowers; C. Mooreana, the flowers of which resemble those of C. cristata, but are carried on erect spikes; and an exceedingly well-grown plant of Angræum Leonis finds a happy home in a corner of the Cattleya house. Vanda cristata, which stands near the V. Kirkii, is like a pigmy against a giant, for the plant is barely six inches high, yet it bears two to four flowers, creamy-white with ferruginous streaks. The labellum, when inverted, resembles a hound's skull with prominent canine teeth.

Bulbophyllums, Catasetums, Erias, and species requiring similar culture are attached by wires to the Cattleya house roof. A plant of Cirrhopetalum ornatissimum at once attracts attention on account of the peculiar smell attached to its flowers, which are borne six or seven in number on a slender peduncle some four inches high, and arranged in fan-like formation. These blooms are brown-purple in colour and have at the tip of each petal and dorsal sepal a tuft of gossamer hairs; purple in certain lights, iridescent in others—waving with the slightest breath. The lip is bright purple. One would think the dainty colours and appendages would be sufficiently attractive to any insect, but apparently this species believes in having two strings to its bow, so that should its floral charms be ineffectual, added inducement is given by odour. Or, it may be, that the particular insect that fertilises the blooms is attracted first by scent, and then by sight. Cirrhopetalums make no mistake in gaining their wishes. The wonderful counterpoise of the lip allows only insects of the exact size to gain access to the pollen, and by the rigid exclusion of smaller and larger insects ensures perfect cross fertilisation, so keeping the species true.

A pretty trio of miniature Dendrobiums is included: D. cymbidioides, represented by a fine specimen, D. triflorum, close to it in size, but wrongly named, as it more often than not carries five or six flowers on a spike, and D. elongatum, with erect many-flowered spikes resembling the two preceding in the shape of the blooms, but below them in size. All have similar characters, the pseudobulbs produced one above the other, flowering from the apex of the one last made, the growth somewhat resembling that of Maxillaria tenuifolia and M. meleagris, which together with M. picta are in this collection. The latter is represented by a small plant carrying several pretty and sweetly-scented flowers, modest in that they grow close to the pseudobulbs beneath the foliage, but demanding attention by their sweet fragrance.

The further house is entirely filled with Cypripediums, telling specimens of the older hybrids, such as Mons. de Curte, Ashburtoniæ, Leeanum, Sallieri, Harrisianum and Pitcherianum, compose the back rows, and which, in

addition to their use for cut-flower purposes, serve as foils to several well-grown plants of C. insigne Sanderæ, Maudiæ, Actæus, Antinous, Dreadnought, Lion, and Bianca. Suspended from the roof of this house are some plants of Cattleya citrina and Vanda Watsoni.

Cymbidiums are represented by numerous species and hybrids at one end of the Odontoglossum house. Sobralias thrive at the cool end of the warm corridor, and Aërides, Saccolabiums and several allied genera are placed with the Vanda suavis. Altogether a well balanced and carefully arranged collection, the vigorous health of the plants testifying to the assiduity and constant care of Mr. Watson, and Mr. Field, who carries out the practical part of the cultivation.

This article would be incomplete if no mention was made of the fact that the prominent and noteworthy position now held by the Bletchley Park collection, is very much due to the personal supervision and skilful attention given by Mr. E. Cooper, of Messrs. Sanders, St. Albans. Possessing a knowledge of Orchids that is as extensive botanically as it is complete in methods of cultivation, it is always his pleasure to render assistance to the many amateurs who seek his advice.

Since the above article was written, Mr. Field has relinquished his position in the Bletchley Gardens, his successor being Mr. Chambers, who was previously with Mr. E. V. Low, and in charge of other collections. E.C.T.

ORCHIDS AT DEVIZES.—Considerable success has been achieved with various Orchids in the collection of J. Frederick Phipp, Esq., at Devizes. Among the Cypripediums that have recently bloomed profusely are C. insigne Sanderæ and the Harefield Hall variety of this species, the elegant C. Maudiæ, C. Leeanum and other hybrids of C. Spicerianum, a robust plant of C. villosum type, as well as Selenipediums. A small plant of Cattleya labiata carried eight finely-developed flowers, and the pretty Epidendrum vitellinum autumnale produced an erect spike with many flowers of cinnabar-orange colour. Evidence of the fine effect produced by the above plants is given in a photograph, the centre plant in which is a beautiful seedling between Lc. Colmaniana and Slc. Helen, of dark rose-colour and with the richly-coloured lip prettily frilled. Orchids grown to this state of perfection not only give considerable pleasure to their owner and cultivator, but are an encouragement to all who see them.

PESCATOREAS.—These plants are easily grown if they get the treatment required, but they are often killed by not having sufficient heat and moisture. They succeed best in the warmest end of the East Indian house, with water all the year round, for they never seem to require any rest. The attention that may be given then will be well repaid.—*Williams' Orchid Manual.*

CULTURAL NOTES.

BY J. MACKAY, ORCHID GROWER TO JAMES J. JOICEY, ESQ., THE HILL, WITLEY, SURREY.

THE year 1921 will be remembered for the prolonged period of tropical heat and drought. That Orchids generally have benefited by these conditions is fairly obvious, and those that may be specially mentioned are Vandas, Dendrobiums, Calanthes, and the various Cattleya groups. Some of these have made quite exceptional growth and have flowered with great vigour and effect during the late autumn; others that flower later promise equally well. Odontoglossums and allied cooler varieties did not find these tropical conditions quite so beneficial, and the grower's efforts were sorely tried in keeping conditions at all suitable, yet we find after a few months of cooler weather that the plants have regained their old vigour and give promise of abundant flower at a later period.

SEASONABLE WORK.—The principal work in the Orchid houses will consist in maintaining the required temperatures and suitable atmospheric conditions. Also, if not already done, cleaning the houses and plants. The following temperatures will serve as a guide for the next few weeks:—

Cool House, day 55 degs., rising with sun to 60 degs., night 50 degs.

Intermediate House, day 60-65 degs., rising to 68 degs., night 58 degs.

Warm House, day 68-70 degs., rising to 75 degs., night 65 degs.

The weather conditions at this time of the year are so apt to change quickly that it is better during spells of severe cold to record a slightly lower temperature than resort to excessive fire heat, while the use of lath blinds and other covering material at night will greatly economise the heat during frosty or windy weather, removing them early in the morning as conditions permit. Endeavour to maintain the temperature as even as possible at this period, so that plants which are inactive may not be unduly started into premature growth. Admit air when conditions are favourable, and although this cannot be done as freely as hitherto, sufficient should be given on the leeward side to keep a sweet and buoyant atmosphere for the plants.

Damping down will be necessary at least once a day, and should be done when the temperature is rising. When watering the plants, choose if possible a bright day for this important operation. Plants need all the light possible at this time of the year, especially in the vicinity of large towns where fogs are apt to be prevalant. The sooty deposit on the glass should be washed off as often as necessary. If not already done, advantage should be taken this month to thoroughly clean the inside of the houses, removing the plants where possible to a vacant house. Before returning them they may be sponged with diluted nicotine insecticide, and when scale insects are detected these can be destroyed by the application of methylated spirit.

CYPRIPEDIUMS.—This very useful section of winter-flowering Orchids has been giving a very bright display, and will continue doing so for some time yet. When they pass out of flower, any that require repotting should be attended to this month, especially those of the insigne section, and their hybrids. A suitable compost for these consists of equal parts fibrous loam, osmunda fibre, and sphagnum moss, with the addition of crushed crocks and coarse silver sand. Mix all thoroughly together, and before using see that it is fairly moist and warm to the hand. Select pots of suitable size, and in the case of large plants pans will be preferable; crock them according to the amount of root room the plant requires, and work the compost firmly with the potting stick amongst the roots. When potted, the plants should be given a warm, moist position, and but little water will be required for some time, beyond frequent light spraying overhead.

MEXICAN LÆLIAS.—These beautiful species with their hybrids are useful subjects to grow for flower at this time of the year. Yet they often prove very disappointing in the neighbourhood of large towns owing to the visitation of fogs. In rural districts, where one is free from this sooty atmosphere, they are a source of satisfaction to all who see them. The past summer has been one to their liking, and at the present time their beautiful arching spikes of white and coloured flowers are commencing to unfold. Where a house is not set apart for them, a warm end of the Cattleya house will suit them, providing they get plenty of light and air in the growing season. Lælia autumnalis and L. Gouldiana have just passed the flowering stage, and should now be kept on the dry side, with only sufficient water to keep the pseudobulbs from unduly shrivelling.

CALANTHES.—C. Veitchi, C. Harrisii, C. William Murray, and C. Bryan continue to give a useful display of bloom. Very little water will now be necessary after the spikes are fully developed. When the spikes have finished flowering, the bulbs may be turned out of the pots, the compost shaken off, and then stored in shallow boxes placed on a shelf in the intermediate house, where they may remain until the time of repotting comes in March.

CYPRIPEDIUMS.—These comprise another useful class of Orchid for flowering at this period of the year, and one, I am pleased to say, that is becoming very popular. Their flowers last a considerable time, and are always admired for their decorative qualities. With the various species and hybrids, flowers may be had from November until May. Many plants are now developing their spikes, and consequently should not be allowed to get dry; a little extra moisture at this time will be beneficial. Given a position in the intermediate house, they are easily grown and enjoy a compost of fibrous loam with some dry cow manure and a sprinkling of crushed crocks.

MILTONIA VEXILLARIA AND M. BLEAUANA.—These with their various hybrids are now growing rapidly. The plants that were potted last August will be rooting freely, and will require a slight increase of water at the roots from now onwards until the pseudobulbs are completed. Carefully watch for thrip, and destroy them by dipping the leaves and young growths in diluted nicotine, two ounces to one gallon of soft water. Miltonias, as they grow, are apt to get their leaves folded, and these, if not quickly released, will often injure the growth permanently, and cause an unsightly appearance.

EULOPHIELLA ELIZABETHÆ AND THE HYBRID E. ROLFEI are now completing their growth in the warmest house, and will soon be pushing flower spikes from the base of the new bulbs. The former is best grown in baskets with a compost of osmunda fibre and sphagnum moss, whilst E. Rolfei, with its long rhizomes which tends to grow more or less upwards, should be grown on a raft of teak wood placed in a pot or pan. The young growths are subject to attacks of thrip, which soon disfigure their beautiful foliage, but when dipped weekly in the above solution of nicotine they will be kept quite free from this pest.

ORCHIDS AT THE BRISTOL SHOW.

Nov. 9th and 10th, 1921.

THE Bristol Show has always been noted for the excellence of its Chryanthemums and miscellaneous exhibits, but at this event—the first since 1913—the general remark was that the Orchids had never been surpassed, and were a very great feature of the exhibition.

Messrs. Cypher and Sons put up an excellent bank of Orchids, including Vanda cœrulea, Dendrobium Phalæenopsis Schroderianum splendens, probably the best known form of this old species. Platyclinis latifolia, a specimen Maxillaria grandiflora with twelve flowers, Lycaste Skinneri and L. aromatica. Numerous Cypripediums were in excellent condition, as also were Cattleya Bellona and other hybrids, Masdevallia corniculata, and the rare and quaint M. nidifica were very interesting.

Messrs. A. J. Keeling and Sons staged a well arranged group, the prominent feature being a very fine richly-coloured Cypripedium hybrid between Gaston Bulteel and Earl Roberts. There were also specimens of C. insigne Sanderæ, C. Dreadnought and C. Gaston Bulteel. Lælio-cattleyas included J. J. Ansaldo and Mrs. J. W. Ward, and Miltonias were represented by M. Bleuana and M. Leopoldii.

Messrs. Sanders had a fine group centred by a magnificent plant of Cymbidium Tracyanum; close to it were a yellow and crimson variety of

Lc. Carmencita, Lc. Schroderæ, the beautiful Lc. Britannia alba, Lc. Roger Sander, and Cattleya Princess. Other notable plants were Cattleya Fabia and its albino variety, a well-flowered Cœlogyne Mooreana, Oncidium bicallosum, Platyclinis latifolia, and many excellent Cypripediums.

Col. H. Cary Batten, O.B.E., staged a group of excellent Orchids, which included a very fine variety of Cypripedium Rossettii, the elegant C. Memnon, C. villosum aureum, the attractive Oncidium Papilio majus, and the bright yellow O. varicosum Rogersi. In the class for three Orchids in bloom, the same exhibitor was first with Cypripedium Memnon, bearing five flowers, Oncidium aurosum and Cattleya Suavior.

Sir Wm. Howell Davies, M.P. (gr. Mr. J. T. Curtis), received the second prize in this section, with Cyp. insigne Sanderæ, C. insigne Harefield Hall, and a distinct variety of the same species.

C. W. Melville Wills, Esq. (gr. Mr. Chapman), was placed first for two Orchids, Cyp. insigne Sanderæ with five flowers and C. Leeanum superbum. The second prize went to Mr. Curtis, who also was placed first for a single specimen — Cyp. insigne Harefield Hall. Col. Cary Batten received the second prize for Cattleya Appletonii.

In the class for the best plant of Cypripedium insigne, C. R. Dalton, Esq. (gr. Mr. Jennings), came first with a specimen carrying twenty flowers. Col. Cary Batten and Dr. J. Morton Evans being second and third.

Class 18 for three Cypripediums showed Mr. R. Dalton to be first, followed by W. Melville Wills, Esq., and Sir Wm. Howell Davies, M.P., the latter staging C. Stonei superbum, a species very seldom seen, the long drooping petals proving very attractive.

In the class for three orchids in bloom, Mr. H. A. White was first with Oncidium varicosum Rogersii and two Cattleya hybrids. Mr. W. J. Wilkins second with a fine plant of Cyp. Lucifer, and two varieties of C. insigne, and Dr. J. Morton Evans third with Cyp. Arthurianum Sanderæ, etc.

Mr. W. J. Wilkins came first in the class for six Cypripediums, exhibiting C. Leeanum Clinkaberryanum, C. Antinous, larger than usual, C. Maudiæ magnificum, C. Hannibal and C. insigne Harefield Hall. The second prize went to Dr. J. Morton Evans, who included C. Alcibiades superbum and C. Leeanum giganteum.

For six Orchids, any variety, Mr. J. W. Wilkins was first with a beautiful variety of Lycaste Skinneri, a well-flowered Cattleya Wendlandiana, and Cyp. Arthurianum with seven flowers. Dr. J. Morton Evans was second, exhibiting Cypripedium Hitchinsiæ with five flowers, Vanda cœrulea, Lc. Britannia and a pretty hybrid of C. bicolor. The third prize went to Mr. H. A. White, whose best plants were a couple of Stenoglottis longifolia, one with eleven erect spikes, and the other with five.

AN AMATEUR'S EXPERIENCE.

By JOSEPHINE R. WALKER.

OUR Cypripediums have bloomed extraordinarily well this year, and have carried on some plants as many as sixteen blooms, notably on the insigne Sanderæ crosses and the insigne Dorothy, which, by the way, are very lovely for table decoration as they light up so well. As they pass out of bloom we are potting them up, they nearly all seem to need it. We find they grow much quicker in the compost we use, which is about half rough fibre and half loam, and a little cut up sphagnum. Perhaps the amateur's fondness for the watering pot does not have so much effect in this compost as one composed of nearly all loam. In winter they do not seem to show the same tendency to damp-off during the cold spells, and as ours are many of them large plants they might easily do so.

The Mexican Lælias and Læliocattleyas are now coming into bloom. I think the last summer has suited the Mexican plants very well, for they have made huge bulbs and look very vigorous and the picture of health. A friend, who grows these and Læliocattleyas, asked me the other week to go down and look at his plants. It was one of those sunny days we had early in the autumn, and to my surprise he had some roller blinds drawn across the house-tops, making the interior half dark. When I asked him the reason he said that he had read in some Orchid books that all plants required to be shaded from the strong sun. I also have read the same thing, but is it true? I was always under the impression that sunshine was the greatest asset to plant life, and so far as the majority of the Lælia family are concerned they grow naturally in sunny positions.

Four years ago last month we bought some Læliocattleyas from a collection that was being broken up. They were almost the saddest lot of plants I have ever seen, wobbling about in their pots, badly affected with scale, and with nearly all the roots eaten off by woodlice. We knocked them out of the pots, cut off the superfluous back bulbs, scrubbed them clean, and potted them firmly into the smallest possible pots with local fibre and a little moss, and stood them on a bench covered with damp ashes in the centre of the house. Now one would have thought that if anything in the Lælia family would resent direct sunshine it would have been these poor unfortunates, whose only subsistence depended on the sap in the bulbs. For curiosity I have just taken a careful note of what has actually happened. There are 26 plants, averaging five bulbs to a plant, and on only three of these is there a bulb without a leaf, and on only two plants is there a leaf showing a tinge of yellow. One leaf, however, is an exception, having been damaged by drip, but I cut out the piece with a sharp knife, and the rest of this leaf is now quite good. The bulbs are excellent and the leaves carry the deep

green tinge of health. Not only have the plants had the direct sun of a south aspect to face, but, "tell in not in Gath," in the summer, early every morning, they have been sprinkled overhead with a hose-pipe attached to the ordinary tap! On hot days the ashes on the staging and among the pots were sprinkled with water two or three times. I may be wrong, but my opinion is that the sprinkling of the plants and the amount of water thrown around them generally created a film of vapour on the glass that was sufficient to prevent the leaves being scalded. Was it not Louis Forget, Messrs. Sanders' famous collector, who, in describing the discovery of the superb Lælia Gouldiana, stated that after climbing for days from the hot plains he found this lovely flower in the early morning covered with hoar frost; and I suppose a few hours later it would be scorching in the sunshine.

It may be sound for the professional gardener, who can put the blinds on or take them off according to the power of the sun, but the average amateur cannot. I am of the opinion that the admission of air is also a great factor. Strange to say, we never admit air summer or winter, and we are pretty liberal with water, when conditions are at all favourable, consequently, except on very cold nights—and it is cold up here—we always have that delightful humid atmosphere which is probably the secret of our success.

Let me confess again, that the few unfortunate Odontoglossums and Oncidiums that have had the misfortune to find a temporary home in our collection do not appreciate the methods, and they show their resentment by dying. But the Cypripediums, Lælias, Læliocattleyas and Cymbidiums, though they are at the end of the house that in the afternoon is shaded by a tree, grow and bloom pretty much like weeds.

AMATEUR'S PAGE.

Leaves Decaying.—"I have much trouble with the leaves of my Cœlogyne cristata, many of which are disfigured by wet patches that ultimately turn to decay and need to be removed by trimming with scissors."

This condition of the foliage is brought about by an unsuitable atmosphere during the winter. Cœlogyne cristata grows well in a cool greenhouse during the summer time, as well as in the early autumn months, but it requires removing to an intermediate house for the winter. This does not mean that a higher temperature is required during the dull months, but merely a continuation of the same temperature that existed in the cool house during the late summer and early autumn months, and this is generally to be found in what is termed the intermediate houses. With a minimum temperature of 55-60 degrees no difficulty should be experienced

in keeping the foliage in a healthy condition. Less water at the roots will be needed, and the atmosphere should not be too moist during the flowering period, or spotting of the blooms may result.

Dead Skin on Cattleya Bulbs.—"When cleaning my Cattleyas, I am often at a loss to know whether the whitish skin-like sheath on the bulbs should be removed. During the growing season this is, of course, soft and green, but on the completion of the bulb it assumes a dead-like nature."

In days gone by, when almost all the Cattleyas were imported plants, much trouble was experienced in dealing successfully with the insects that had taken shelter beneath this outside skin, consequently it was generally found best to remove it, especially on the older bulbs of the plant. To-day, nearly all Cattleyas are the result of seedlings raised under clean conditions, and until they reach the flowering stage there is rarely any necessity to wash the bulbs. But as the plants get older, and possess back bulbs that are somewhat shrivelled, there is an increasing opportunity for scale and other insect pests to find a habitation. An examination will then often show the need of removing the old dried up outer skin, which becomes more detrimental than otherwise to the plant's healthy existence.

Damping Down the Cattleya House.—"As my Cattleyas are not now growing, should I continue to damp down the house?"—Whenever extra firing is used there is bound to be an increased dryness of the interior of the house, and to remedy this unfavourable condition water must be distributed in places where it will be evaporated and produce a moist atmosphere. As the temperature rises in the early part of the day, so it will be necessary to syringe in between the pots and to distribute water on the ground beneath the staging. In most modern houses the heat from the pipes is prevented from having direct access to the plants by a covering of sheet iron or tiles covered with porous material, such as coke, and this, when charged with water, greatly assists in maintaiuing the required moist state of the atmosphere. Towards the end of the day, when a falling temperature causes some of the atmospheric moisture to be condensed in the form of dew it is rarely necessary to again damp down the house.

THE AMATEUR'S PAGE.—From an amateur grower's point of view, the article by Mr. J. M. Black on confusing the Amateur Orchid Grower, and the Amateur's Page will, I am sure, tend to clear up many matters of culture on which the various books on Orchids give such confused and often totally different directions. Next to watering, I feel that the subject of potting and potting materials would be of great help. As one who has wrested with the various tough fibres on the market, which seem to need an extra strong chaff-cutter to cut them up, I have great sympathy with any amateur who tries to use them for the first time.—J. FREDERICK PHIPP, Devizes.

CYPRIPEDIUMS FROM WESTONBIRT.

BY A VISITOR.

AT the Meeting of the Royal Horticultural Society on December 13th the value of Orchids for winter decoration was again demonstrated. The outstanding feature of the exhibition was the Gold Medal group of Cypripediums from Lieut.-Col. Sir George Holford, K.C.V.O. (gr. Mr. H. G. Alexander). Although only twenty-two plants, they filled an area of fifty square feet. Every plant was ideal, and an exponent of perfect culture and quality, the three or four stately blooms on each specimen looking superb. All had been raised in the Westonbirt collection. Some of the more recently raised plants were smaller, but they gave promise, and served to stimulate the imagination as to their super-perfection when eventually they attain the size and vigour of their confreres. Confined as the group was to a single section of winter flowering Orchids, it might well be taken as an object lesson for the smaller amateur.

Looking at the plants, emotions of admiration, envy, and hope were evoked. They were perfect examples of an expert cultivator's skill. What one grower can accomplish another may attempt, and the very effort brings improvement, if not complete success. The amateur has one great advantage. Usually he can concentrate on one, or a few genera, whereas the grower of a large collection has to give equal attention to many conflicting sections. The greater the credit when, as in the present instance, a really wonderful result is obtained by his care and forethought. That same success should spur the smaller collector, not to despair, but to emulate, and perhaps surpass, if not in all, at least in one section.

There is no finality in Orchid breeding and cultivation. Accommodations, means, and other interests perhaps preclude the possibilities of a large and varied collection all super-excellent, but by growing those Orchids that are the better adapted to any available greenhouse higher results than already existing may be obtained, and a friendly rivalry be established that will go far towards extending the cult of the Orchid. It was understood that Mr. Alexander proposed to move the plants from the R.H.S. Hall to Manchester, and there exhibit them.

Cypripediums are probably more largely grown in the North of England than in the South, and competition and judgment is perhaps keener in the former locality, but it is doubtful if a similar group has ever before been staged either in the North or the South. May it prove the forerunner of others, not necessarily of Cypripediums, for a few well-grown plants of any genus invariably attract more attention than the miscellaneous groups that the trade have perforce to arrange.

Each of the twenty-two plants in Sir George Holford's group was noteworthy, but if one section might be said to stand out prominently it

was that derived, although in some cases remotely, from Cypripedium Fairrieanum. The dainty contours of this charming old species were readily discernible. Many of the present day large flowered hybrids, admirable as they admittedly are, lack colour, but flowers embracing beauty of outline and colour, as do these derivatives of Fairrieanum, will always be more attractive to the general public. Flowers in which mere size is the dominating character are never so pleasing.

The following briefly descriptive list will show to a certain extent the influence Fairrieanum has had in breeding the Westonbirt Cypripediums :—

C. Lucifer (Hera × Niobe), F.C.C. var. Flowers compact and shapely, medium size, dorsal sepal richly suffused and streaked with rose-crimson on a white ground, petals and pouch mahogany-chestnut.

C. Pam, parentage unknown, but evidently with Fairrieanum as an ancestor, near or remote. A charming flower, the margins of the broad dorsal nearly in line with the outer edges of the drooping petals, ground colour white, upper sepal green at the base, the whiteness of the upper portion broken with interrupted lines of rose spots, petals and lip similarly coloured, but in contrast by reason of their delightful apple-green suffusion.

C. Marmion (Germain Opoix × Jura) stood alone in colour, a large well-proportioned flower, crimson bordered with white on the dorsal, the colour extending into the white margin in jagged markings, petals and pouch red-brown, lightest on the latter segment.

C. Baldur (G. F. Moore × Niobe), well named after the most handsome and gentle of the Norse gods, yet a companion to Cyp. Lucifer, but taller on the spike, the dorsal sepal higher than its width and so suffused, marked and streaked with crimson-rose as to appear almost solid ; petals shaded with yellow on the basal portions, otherwise coloured with the pleasing red-brown tint peculiar to so many Fairrieanum hybrids.

C. Corsair (Niobe × nitens). There are several forms of this graceful and pleasing hybrid in the country, but the present one is larger than the majority, and of more intense coloration. Dorsal sepal deep rose centrally, the outer halves rayed and striated with bright rose, the whole bordered with white. Petals and pouch models in proportions, the former lined, and the latter suffused with deep mahogany.

C. Nydia (Niobe × nitens-Leeanum). A decided addition to this section, resembling Baldour and Lucifer in general formation and colouring, but the dorsal is rounder, and its dark median line is rendered more conspicuous by the pure white on either side.

C. Latona (Alcibiades × Niobe). Again the characteristic Fairrieanum contours are prominent, but the dorsal sepal is much larger than usual, with the upper portion white and the lower shaded with green, while light rose-pink spots are arranged in lines.

C. Minotaur (Hera × nitens-Leeanum) was probably the most conspicuous in the group. A stately plant bearing four imposing flowers on robust scapes. The shapely, rounded dorsal sepal is ivory white, with a median narrow line of black-crimson, a few scatterred spots break the whiteness, and at the extreme base are some twenty or more dark rounded conglomerate spots, above them a yellow suffusion rayed with green.

C. Cyclops (Actæus × fulshawense). This hybrid was first exhibited from the Westonbirt collection in 1913, but has never been seen to much advantage before. Three magnificent bold flowers, lacking perhaps the brightly coloured tints of the Fairrieanum hybrids, but with compensation in their size, shape and substance. The apical area of the dorsal sepal white, its centre green with chestnut-red spots, petals and lip mahogany-red, the former edged with yellow.

C. Actæus Bianca (insigne Sanderæ × Leeanum Prospero) was represented by two plants, and the gold and porcelain-white flowers of this well-known variety are always lingered over.

C. Moonlight (Moonbeam × Actæus Bianca) was placed near to Marmion, and a greater contrast could not have occurred. Flowers about the same size, but the apt name Moonlight conveys some idea of the soft yellow, green-shaded petals and pouch, the colour passing to the base of the dorsal sepal, the upper portion of which is china-white with a central suffusion of softest rose.

C. Olympus (Alcibiades × Leeanum). First shown in 1913, this variety still holds its own for size and beauty ; the margin of the dorsal sepal is strongly undulated, white, with a dark median line and a rayed basal suffusion of green.

C. Muriel II. var. amethystinum (Cynthia × Hera). The first Muriel was raised by W. M. Appleton, Esq., in 1904, between tonsum and Chamberlainianum. From such parents Muriel II. differs very widely, and the variety amethystinum is even more distinct. The dorsal sepal, with the exception of a narrow white border, is of that peculiar tone of purple-red known as port wine, darkest at the base, the petals tessellated and suffused with light chestnut on a greenish ground. The inferior sepal is very remarkable, the central portion being green from base to apex, the outer portions much as in the dorsal. Each of the three flowers was similarly characterised.

C. Golden Fleece (insigne Sanderæ × Antinous), a rival to Actæus Bianca, similarly coloured, perhaps of deeper gold, but the broad white area so conspicuous on the dorsal of Bianca is here reduced in size, and the organ is more contracted basally.

(*To be continued.*)

ROYAL HORTICULTURAL SOCIETY.

Nov. 29th, 1921.

MEMBERS of the Committee present : Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Prince Tadashige Shimadzu, Messrs. J. O'Brien (hon. sec.), W. J. Kaye, Fred. J. Hanbury, C. H. Curtis, J. Wilson Potter, Richd. G. Thwaites, Pantia Ralli, E. R. Ashton, Gurney Wilson, T. Armstrong, J. E. Shill, H. G. Alexander, Fred. K. Sander, C. J. Lucas, R. Brooman-White and A. Dye.

FIRST-CLASS CERTIFICATE.

Sophrolæliocattleya His Majesty (Slc. Marathon × C. Trianæ Backhouseana), from Messrs. Charlesworth & Co.—A fine result, all the segments well proportioned and of crimson-pink tinge, the labellum dark crimson with slight gold veining.

AWARDS OF MERIT.

Odontoglossum Phillipsianum (eximium xanthotes × luteopurpureum Vuylstekeanum), from Pantia Ralli, Esq., Ashtead Park, Surrey.—The spike carried four flowers of eximium formation, the segments heavily blotched with salmon rose-colour. It is quite distinct from other plants of this name.

Cypripedium Nydia (Niobe × niters Leeanum) from Lieut.-Col. Sir George Holford, K.C.V.O., Westonbirt.—A great improvement on previous hybrids of the Niobe section. The large dorsal sepal is flushed with rose and densely spotted with purple, the petals and lip are yellow with an over tint of brownish yellow.

Cypripedium Asion (Queen Alexandra × aureum Oedippe), from Messrs. Charlesworth & Co.—A large flower having the dorsal sepal orbicular in shape, white with rose-colour at the base : the petals and lip reddish purple.

Brassocattleya Admiral Jellicoe var. Rosita (Bc. Digbyano-Mossiæ × C. Lord Rothschild), from Messrs. Stuart Low & Co.—A flower of fine formation and remarkable for the unusually rich coloration, this being rose-mauve throughout the whole flower.

Odontioda Enchantress (Odm. harvengtense × Oda. Madeline), from Messrs. J. & A. MacBean. This plant carried a spike of 16 flowers, of excellent formation, densely spotted with red, the apex of lip rose-coloured.

Messrs. Stuart Low & Co., were awarded a Silver Flora Medal for an extensive exhibit containing fine examples of Vanda cœrulea, Lycaste Skinneri alba, Cattleya labiata R. I. Measures, C. Cantuarie Low's var., very fine C. Peetersii, the bright Læliocattleya luminosa aurea, Bc. Admiral Jellicoe, Lc. Pathfinder, with four large richly-coloured flowers, and Eria micrantha, with five arching spikes.

Messrs. Sanders received a Silver Flora Medal for an excellent group in

which were numerous Cypripediums, among the best being Dreadnought, Durbar and Nydia; also Lc. Schroderæ alba, distinct forms of Cattleya Fulva and C. Enid, and Cymbidium Hebe (erythrostylum × Pauwelsii), ivory-white tinged with rose, the lip blotched with red at the apex.

Leiut.-Col. Sir George Holford, K.C.V.O., exhibited Cypripedium Viking, an excellent and very distinct hybrid; also C. Osprey (Lucifer × Caractacus) a pleasing novelty af excellent formation.

Messrs. Charlesworth & Co., staged Odontoglossum Crethus, with a spike of four flowers having claret-red blotching, and O. Vesuvius (eximium × Amethyst), handsomely blotched.

Messrs. J. & A. McBean exhibited Sophrolæliocattleya Rosalind (Sc. Pearl × Lc. Dominiana), carrying three neat flowers of medium size and rose-purple in colour.

Baron Bruno Schröder exhibited a cut spike of an unusually fine variety of Læliocattleya Schroderæ.

December 13th, 1921.

Members of the Committee present:—Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Prince Tadashige Shimadzu, Rev. J. Crombleholme, Messrs. J. O'Brien (hon. sec.), R. Brooman-White, F. J. Hanbury, C. H. Curtis, Pantia Ralli, E. R. Ashton, H. G. Alexander, J. E. Shill, Gurney Wilson, C. J. Lucas, J, Wilson Potter, W. J. Kaye, S. W. Flory, and A. Dye.

AWARDS OF MERIT.

Odontioda Juno (Oda. Coronation × O. eximillus), from R. Gerrish, Esq., Manor House, Milford, Salisbury. A very pleasing hybrid, the erect spike carrying 13 medium sized flowers of bright reddish-brown colour, the tips of the segments rose-tinted.

Odontoglossum eximillus Rex, from Messrs. Armstrong & Brown. Flowers above the average size, all the segments broad and handsomely blotched with claret-purple over an extensive area.

Odontoglossum St. George var. Majestic, from Messrs. J. & A. McBean. A fine result in which the large flowers are of excellent formation, almost covered with reddish-purple blotching, the tips of the segments rose-coloured.

GROUPS.

Lieut.-Col. Sir George Holford, K.C.V.O., Westonbirt, was awarded a Gold Medal for an exceptionally fine exhibit of superb Cypripediums. They included Lucifer, with four prettily marked flowers, Garibaldi, with six large blooms, Actæus Bianca, Corsair, Moonlight, very beautiful, the Westonbirt variety of Golden Fleece, Muriel var. Amethyst, with a suffusion of amethyst-purple on the dorsal sepal, and Ballet Girl, in which the cohesion of the lateral sepals forms a segment larger than the dorsal sepal.

Sir Jeremiah Colman, Bart., Gatton Park, Reigate, received a Gold Medal for an extensive exhibit in which were several well-flowered specimen Cypripediums, including Arthurianum with eleven flowers, King Emperor, Earl of Tankerville, Royal George and Leeanum aureum giganteum. Fine spikes of Vanda cœrulea, the scarce Dendrobium Victoriæ Reginæ. Cirrhopetalum appendiculatum, and the rare Bulbophyllum lemniscatoides were seen to advantage, as also were some fine Cattleyas and the elegant Sc. Eleanor, scarlet-red with golden throat.

Messrs. Armstrong & Brown were awarded a Silver-gilt Medal for a fine exhibit of Cattleya Maggie Raphæl alba, five of the best plants each carried five flowers on a spike. Among the Læliocattleyas were fine forms of Schröderæ and Bombadier, while Cypripediums of merit included Maudiæ, majesticum and Arthurianum. The rare Dendrobium Cœlogyne, a fine variety of Oncidium Papilio, and Od. crispum Oakfield Sunrise were also included, and in the background were many fine specimens of Odontoglossums and Odontiodas.

Messrs. J. & A. McBean were awarded a Silver Flora Medal for a group, of various hybrids, including Od. St. George, richly coloured Lc. Linda, very choice Od. Aision (Solon × Acquitania), the elegant Bc. Vilmoriniana, Bc. Bianca, with a large flower, Cattleya Maggie Raphael superba, an elegant variety, and richly coloured Odontiodas, of which Diana was one of the best. The pretty Oncidium incurvum album was shown with a much branched spike of numerous flowers.

Messrs. Charlesworth & Co. obtained a Silver Flora Medal for an attractive exhibit of Odontoglossum crispum, about 20 specimen plants, the result of crossing two very fine varieties. All the flowers were of excellent formation and of thick texture. A cut spike of Eulophiella Rolfei, with numerous rose-purple flowers, was also included.

Maj.-Gen. Sir Charles F. Hadden, K.C.B., Rossway, Berkhampstead, was awarded a Silver Banksian Medal for a group of specimen plants of Cypripedium insigne, very well flowered, and of Cyp. Leeanum, barbatum, and Ashburtoniæ.

The Rev. J. Crombleholme exhibted Cypripedium Sanactæus var. Theresa, very distinct, white, with yellow petals and lip; Cyp. Lord Wolmer var. Plutus, with a prettily spotted dorsal; and Cyp. Monialis Rosa (Velatum × Niobe).

E. R. Ashton, Esq., Broadlands, Tunbridge Wells, staged Od. Ithone var. Papillon, with a spike of seven flowers effectively blotched with reddish-brown.

Col. Stephenson R. Clarke, C.B., Borde Hill, Cuckfield, exhibited Brassocattleya Albion var. alba (Bc. Thorntonii × C. Trianæ alba) an attractive flower, pure-white, with greenish-yellow in the throat.

J. J. Bolton, Esq., Claygate, Surrey, showed Od. Nathaniel var. Ericii, with a fine spike of twelve chocolate-coloured flowers.

Pantia Ralli, Esq., Ashtead Park, Surrey, exhibited Od. St. George var. Amethyst, a very fine and richly coloured flower.

Dave Barnard, Esq., Leighton Dene, Watford, staged Cypripedium Formidable, a large flower, the dorsal having a greenish base and white upper part, the petals and lip tinged with purple-brown.

Baron Bruno Schröder, Englefield Green, exhibited Cypripedium Eurybiades, a distinct variety in which the petals are unusually broad and of rich mahogany colour.

Messrs. Flory & Black staged Lc. Our Princess, a distinct flower of cream colour, the margin of the lip rose-tinted. Also Cattleya Brenda, Bc. Zephyr, very pretty, Lc. Chimaera (Lc. Hector × C. Dowiana), and the richly coloured Slc. flammea.

MANCHESTER ORCHID SOCIETY.

November 3rd, 1921.

MEMBERS of the Committee present: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, Dr. F. Bedford, J. Birchenall, A. Burns, D. A. Cowan, J. C. Cowan, J. Cypher, A. G. Ellwood, J. Evans, W. G. Giles, Dr. R. N. Hartley, J. Howes, A. Keeling, D. McLeod, E. W. Thompson, and H. Arthur (secretary).

A Large Silver-gilt Medal was awarded to A. Hanmer, Esq., and Large Silver Medals to S. Gratrix, Esq., and A. T. Cussons, Esq. Silver Medals were granted to the Rev. J. Crombleholme, Messrs. Cypher & Sons, and Messrs. A. J. Keeling & Sons.

FIRST-CLASS CERTIFICATES.

Cattleya Puritan, C. Anette var. Princess Mary, C. Thor, Edgemoor var., C. Hardyana, Edgemoor var., Lc. Pepita, and Vanda cœrulea var. Renown, from A. Hanmer, Esq.

Cattleya Bellona alba Gratrixiæ, Bc. The Baroness, Lc. Muriel var. Dreadnought, and Odontoglossum Montezumna, from S. Gratrix, Esq.

Odontoglossum crispum West Point Rex, from Mrs. Gratrix.

Bc. Sofrano var. Renown, from P. Smith, Esq.

AWARDS OF MERIT.

Lc. Dragonosa, Bc. Lisette, and Odontoglossum crispum Fairy, from S. Gratrix, Esq.

Cattleya Bryan alba, Lc. Scylla, Edgemoor var., Cypripedium Mrs. Rickards var. Cornutum, and Odontoglossum amabile var. Avalanche, from A. Hanmer, Esq.

Cypripedium Evulston, C. Cavalier giganteum and Odontoglossum Uro-Dora, from P. Smith, Esq.

Cattleya labiata alba Prince of Wales, and C. Snowflake West Point var., from Mrs. Gratrix.

Cypripedium Idox Vazran, and Odontioda Dodeham var. Kaleida, from the Rev. J. Crombleholme.

Cypripedium Christopher var. St. Andre, from B. J. Beckton, Esq.

AWARD OF APPRECIATION—FIRST-CLASS.

Odontoglossum crispum West Point Radiance, from S. Gratrix, Esq.

CULTURAL CERTIFICATES.

Mr. W. G. Giles, for Vanda cœrulea var. Renown, and Cattleya Serbia Leeana.

Mr. J. Howes, for Bc. The Baroness, and Bc. Penelope.

Mr. F. Cookson for Pleione lagenaria.

November 17th, 1921.

Members of the Committee present: R. Ashworth (in the chair), Messrs. B. J. Beckton, A. Burns, A. Coningsby, D. A. Cowan, J. C. Cowan, J. Cypher, J. Evans, W. G. Giles, J. Howes, A. Keeling, J. McNab, D. McLeod, E. W. Thompson, and H. Arthur (secretary).

A Gold Medal was awarded to Mrs. Bruce and Miss Wrigley for a fine exhibit of over 250 Cypripediums in variety. A Silver-gilt Medal was granted to S. Gratrix, Esq., and Silver Medals to A. Hanmer, Esq., and Messrs. Cypher & Sons.

FIRST-CLASS CERTIFICATES.

Lycaste Redwing, and Cypripedium Nabob, from S. Gratrix, Esq.

Cypripedium Rossettii var. Renown, and Lc. Marshall Foch, from A. Hanmer, Esq.

Cypripedium hololeucum and C. Fairville, from P. Smith, Esq.

Sophrocattleya Dorea, Low's var., from Messrs. Stuart Low & Co.

AWARDS OF MERIT.

Cypripedium Overtonii var. Oristo, and Bc. Maroniris, from S. Gratrix, Esq.

Cypripedium Garland, West Point var., from Mrs. Gratrix.

CULTURAL CERTIFICATES.

Mr. A. Burns for a collection of Cypripediums.

Mr. E. W. Thompson, for Oncidium corynephorum.

Dec. 1st, 1921.

Members of the Committee present: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Burns, W. Beesley, A. Coningsby, D. A. Cowan, J. Cypher, A. G. Ellwood, J. Evans, G. Giles, A Hanmer, Dr. R. N.

Hartley, J. Howes, A. Keeling, D. McLeod, E. W. Thompson, and H. Arthur (secretary).

A Large Silver-gilt Medal was awarded to S. Gratrix, Esq., for a group of Cattleyas; Silver-gilt Medals to A. Hanmer, Esq., for Læliocattleyas, and to Rev. J. Cromblehome for an exhibit of Cypripediums, principally home-raised; a Silver Medal to Mrs. Bruce and Miss Wrigley for Cypripediums, the majority of which were also home-raised; a Large Silver Medal to Messrs. J. Cypher & Sons for a group.

R. Ashworth, Esq., exhibited cut flowers of various Cattleyas and Odontoglossums. Mr. D. McLeod staged Cypripediums in variety, and Messrs. Charlesworth & Co. exhibited a fine cut spike of Eulophiella Rolfei (Elizabethæ × Peetersiana).

FIRST-CLASS CERTIFICATES.

Lc. Cornelius superba, very dark richly-coloured flower; Lc. Zeno Edgemoor var., perfect shape; Cyp. Mario Edgemoor var.; C. Mulatto splendens, fine flower, very distinct, from A. Hanmer, Esq.

Slc. His Majesty var. Bedfordiæ, sepals and petals purple-crimson, lip dark crimson, flower of perfect shape. A Gold Medal was also awarded. Zygopetalum Brewii, Bedford's variety, the large lip rose-coloured, from Dr. F. Bedford.

Cyp. Lord Wolmer var. Plutus, grand shape and dorsal sepal heavily spotted, from Rev. J. Crombleholme.

Odm. crispum Radium, richly coloured, from S. Gratrix, Esq.

Odm. rubescens (Rossii rubescens × majesticum), sepals and petals pale purple, spotted with rich brown, from P. Smith, Esq.

AWARDS OF MERIT.

Cyp. Leonora Cook (Earl of Tankerville × Mrs. Godman), Cyp. Archville (Archimedes × Earl of Tankerville), Cyp. Delhi var. The Tank, from Mrs. Bruce and Miss Wrigley.

Cyp. Dalmation, Bc. Massangeana, Bc. President Wilson, Blenheim var., from S. Gratrix, Esq.

Cyp. Monialis var. Artifex, from Rev. J. Crombleholme.

Cattleya Douai var., Snow Queen, from A. Hanmer, Esq.

December 15th, 1921.

Members of the Committee present; Rev. J. Crombleholme (in the chair), Mrs. Slingsby, Messrs. R. Ashworth, Dr. F. Bedford, B. J. Beckton, J. Birchenall, A. Burns, A. Coningsby, J. Cypher, A. G. Ellwood, J. Evans, W. Giles, Dr. R. N. Hartley, J. Howes, A. Keeling, J. Lupton, D. McLeod, F. K. Sander, E. W. Thompson, H. G. Alexander, and H. Arthur (secretary).

A Gold Medal was awarded to Lieut.-Col. Sir George Holford, K.C.V.O., for a superb group of Cypripediums; a Silver-gilt Medal to Mrs. Bruce and Miss Wrigley, and a similar award to S. Gratrix, Esq., for excellent exhibits of various Orchids; Large Silver Medals were awarded to H. Green Esq., Birmingham, and A. Hanmer, Esq., Buxton; Silver Medals to A. T. Cussons, Esq., Kersal, Mssrs. Cypher & Sons, and Messrs. Sanders.

B. J. Beckton, Esq., Irlams-o'-th'-Height, staged Cyp. Grovesianum var. W. A. Stewart, and C. Christopher, and Messrs. Charlesworth & Co., exhibited a selection of cut flowers.

FIRST-CLASS CERTIFICATES.

Cyp. Dalmatian, B. Elise var. Grand Monarch, and Od. Princess Mary, exceptionally fine, white, heavily blotched, from S. Gratrix, Esq.

Cyp. Eurybiades Bedfordiæ, and C. Sanacderæ Bedfordiæ, from Dr. F. Bedford.

Od. St. Edmund, and Od. Ithone Edgemoor, from A. Hanmer, Esq.

Cyp. Grey Friar (Grovesianum × Tracyanum), from Dr. R. N. Hartley.

Calanthe Harrisii, from the Hon. Robert James.

AWARDS OF MERIT.

Cyp. amberleyense, C. Piccanini, C. brilliantissimum, and C. Birkdalense var. Chanticleer, from Harry Green, Esq.

Cyp. Trebizona, C. Monte, and Od. crispum Medusæ, from S. Gratrix, Esq.

Cymbidium Mastersii Cusson's var., from A. T. Cussons, Esq.

Cyp. Challenger, from A. Hanmer, Esq.

Cyp. Roy. Hartley (Earl of Tankerville × alportense), from Dr. R. N. Hartley, Esq.

AWARDS OF APPRECIATION, FIRST-CLASS.

Cyp. Hilda Walker var. Chesham, and C. Titania, from Mrs. Bruce and Miss Wrigley.

Od. Asta and Oda. Lady Patricia Ramsey superba, from A. Hanmer, Esq.

Od. crispum Constance, from S. Gratrix, Esq.

Cyp. Sunlight, from Col. Sir J. Rutherford, Bart.

CULTURAL CERTIFICATES.

Mr. J. Benstead, for Calanthe Harrisii.

Mr. A. Burns, for Lælia Gouldiana.

ORCHID CATALOGUE.—Messrs. A. J. Keeling and Sons, Westgate Hill, Bradford, Yorks, have published a catalogue of choice and valuable duplicates from two well-known private collections, together with an interesting series of plants from their own stock.

THE ORCHID REVIEW.

VOL. XXX.] FEBRUARY, 1922. [No. 344.

NOTES.

MAXILLARIA ELEGANTULA.—This attractive species, allied to M. grandiflora, has the sepals and petals white at the base, and deep yellow at the apex, spotted with dark purple-brown; the lip yellow, margined with purple at the base. The exterior area of the sepals is stained with brown-purple. It has recently been in flower with Messrs. Charlesworth & Co., the scapes exceeding nine inches in height.

DR. R. S. ROGERS.—We learn with considerable pleasure that Lieut.-Col. R. S. Rogers, M.A., M.D., an acknowledged authority on Australian Orchidology, has been elected President of the Royal Society of South Australia. At the recent annual meeting of this Society, Dr. Rogers read a paper entitled, "Notes on the Pollinary Mechanism of Phajus, and the Gynostemium in the genus Diuris." Several of his scientific papers concerning Orchids have been published in the Society's Transactions, and "Some South Australian Orchids," written in popular style, and well illustrated, is now in its second edition.

MONOPODIAL AND SYMPODIAL ORCHIDS.—The growth of Orchids may be classified in two important divisions. The one, known as the Monopodial, includes those plants which continue to grow in an upward direction, as seen in the genera Vanda, Aërides, and Angræcum; the other, known as the Sympodial, embraces a larger number of plants, which commence a new growth annually from the base of the previous one, as witnessed in Odontoglossum, Cattleya, and Cypripedium. The genus Cymbidium, however, appears to hold a somewhat intermediate position, and occasionally shows a tendency to pass from the sympodial habit of growth to the monopodial type. Evidence of this has occurred in the Cymbidium house of Messrs. J. & A. McBean, who have recently raised numerous hybrids in the genus. A plant of C. Schlegelii (insigne Sanderi × Wiganianum) has completed an extended bulb with seven leaves on one side of it and eight on the other.

giving it the appearance of a hybrid between the genera Vanda and Cymbidium. A further noteworthy point is the long period frequently taken to complete the primary bulb of a Cymbidium seedling. Seed of C. Gottianum (eburneum × insigne Sanderi) sown in the early part of 1916 has yielded a plant that has continued to develop in monopodial or Vanda style, for at the age of six years it has not yet commenced a second growth from its base. There are several similar examples, but as they are now carrying one or two flower spikes it is very probable that the first period of growth has been completed, and that further activity will take the form of a new growth from the base of the plant.

NOTES ON ZYGOCOLAX.

THE small section of Orchid hybrids recorded under the name *Zygocolax* is represented by five garden hybrids, Colax jugosus being the parent in each case.

Zygocolax Veitchii was raised by Messrs. Veitch & Sons from *Zygopetalum crinitum* crossed with Colax jugosus. The seed was sown in September, 1882, and the plant flowered for the first time in March, 1887, when about 4½ years old. F.C.C., R.H.S., March 22nd, 1887. The variety Kromeri, A.M., R.H.S. November 6th, 1900, was recorded as a natural hybrid of similar parentage, and imported from Brazil by Mr. Ed. Kromer.

Zygocolax leopardinus flowered for the first time in 1886, and was described as *Zygopetalum leopardinum*. The parentage was at first doubtful, but has since been ascertained to be *Zygopetalum maxillare* and Colax jugosus. F.C.C., R.H.S., November 9th, 1886. Wigan's variety of this hybrid was obtained by using *Z.* maxillare Gautieri, and received A.M., R.H.S., January 9th, 1900.

Zygocolax Amesianus is the result of crossing *Z.* brachypetalum with C. jugosus. It was exhibited by Messrs. Sanders, at the Royal Horticultural Society, December 19th, 1899, and obtained an Award of Merit.

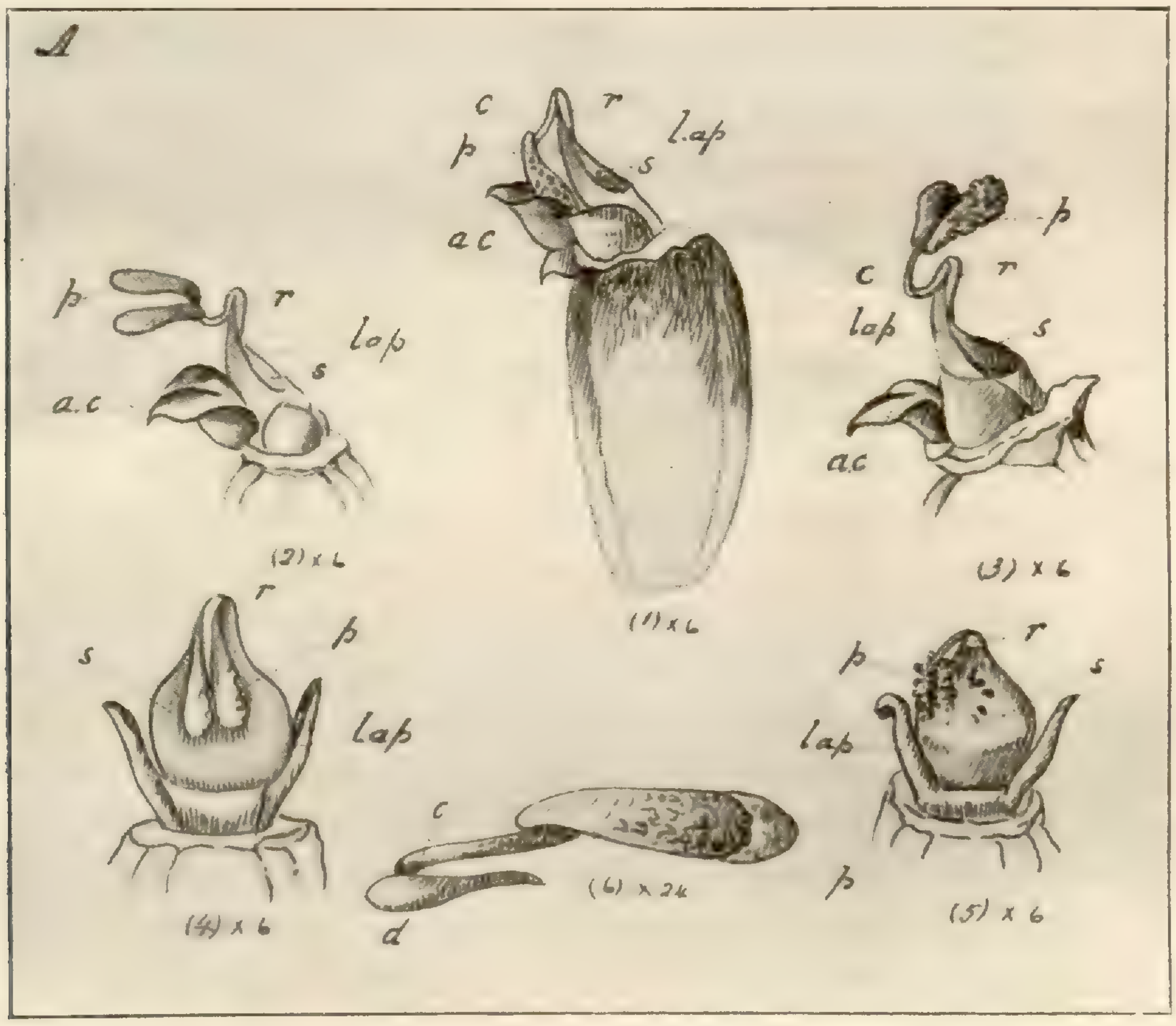
Zygocolax Wiganianus is a hybrid between *Z.* intermedium and C. jugosus. It was exhibited by Sir Fred. Wigan, at the Royal Horticultural Society, January 9th, 1900, and received an Award of Merit. The variety superbus was flowered by Messrs. Sanders and obtained a First-class Certificate, February 25th, 1902.

Zygocolax Charlesworthii bears the name of its raisers, the parents being *Z.* Perrenoudii and C. jugosus. It received an Award of Merit, R.H.S., November 23rd, 1909, and a similar award was given to Cobb's variety January 23rd, 1912. The richly coloured variety rubida was exhibited by Messrs. Charlesworth & Co., R.H.S., December 21st, 1909, and obtained a First-class Certificate.

AN AUSTRALIAN PARALLEL WITH OPHRYS APIFERA, HUDS.

BY COLONEL M. J. GODFERY, F.L.S.

IT was shown in the *Journal of Botany*, Oct., 1921, that cross-pollination can and does still occur in Ophrys apifera, and that self-fertilisation is a safe guarding provision in the event of cross-pollination failing to take place. A very curious and in many ways parallel case in an Australian Orchid is described by Dr. R. S. Rogers (*Trans. Roy. Soc. S. Australia*, vol. xxxvii., p. 54, from which the text figure is taken). It occurs in Prasophyllum gracile, Rogers, belonging to the Neottieæ, a tribe to which our Epipactis, Spiranthes, Goodyera, etc., also belong.



COLUMN OF PRASOPHYLLUM GRACILE, ROGERS. A C. ANTHER-CASE ; P POLLINIA ; C. CAUDICLE; R. ROSTELLUM; S. STIGMA; L.A.P. LATERAL APPENDAGES OF COLUMN. FIG. 6 : POLLINIA ATTACHED TO DISC (d) OF ROSTELLUM (MUCH MAGNIFIED).

The pollinia of P. gracile are transferred by a small beetle, Trogoderma adelaidæ, and cross-pollination occurs in a large percentage of cases. It will be seen from fig. 1 that the anther lies behind the stigma, and that the pollinia are attached to the rostellum by a long stout stalk. The anther opens widely, and curves backward, leaving the pollinia quite free (fig. 2). If the latter are not removed by insects, their stalks curl upwards to such an

extent that the pollinia are lifted into a position vertically above the stigma (fig. 3), and the rotation continues until they are finally deposited on its frontal surface (fig. 4). Fig. 5 shows a case in which the movement has occurred in an oblique plane.

In O. apifera the action of gravity is sufficient to explain the curving downwards of the caudicle till the pollinia are poised in front of the stigma, and their oscillation through wind is quite enough to bring them into contact with it. Self-fertilisation may therefore have been due in the first instance, so to speak, to a happy accident. In P. gracile the transfer of the pollinia from anther to stigma is effected by such an ingenious piece of mechanism that the evidence of intentional adaptation is equally clear both for cross and self-pollination. As in O. apifera the latter is subsidiary to the former, and only takes place if necessary.

Dr. Rogers states (in lit.) that "the stalk of the pollinium in all the Prasophylliums is a true caudicle and not a stipes as in the Vandeæ. It is the product of the pollen-masses and not of the rostellum. The pollen in this genus is sectile and the various elastic strands from each pollinium unite into a single organ (caudicle) on the anterior face of the two masses near their common apex; thence it passes on to its connection with the 'viscid disc' of an emarginate rostellum. Both anther-case and pollinia are at first vertical."

There are several remarkable points in the functional activities of the mechanism for the pollination of P. gracile. The bending back of the anther so as not to hinder the rotation of the pollinia is worth notice, as well as the peculiar position of the anther at the back of the stigma, and not on the summit of the column as in European Orchids. The rotation of the pollinia through an angle of more than 180° after removal by an insect is striking, not only on account af the magnitude of the angle, but also because (judging by Dr. Rogers' excellent figures) it appears to be due to a curling movement of the caudicle itself, and not to the hygrometric shrinkage of a part of the viscid disc. Further, self-pollination is brought about by the rotation of the pollinia *in situ*, in the same manner as after removal by insects. No movement of depression occurs in the pollinia of any European Orchid until after the viscid discs have been withdrawn from their pouches, and then only through an angle of 90°. It would be interesting to know whether similar movements of thə pollinia *in situ* are known in other genera of the Orchidaceæ.

It is remarkable that a case of alternative self-pollination is some ways parallel with that of Ophrys apifera (which belongs to the Basitonæ) should occur in such a very widely separated genus belonging to the Acrotonæ.

HOLOTHRIX JOHNSTONI.—An East Tropical African species, collected near Zomba by Sir H. H. Johnston, It is allied to H. condensata, but has larger flowers and a five-lobed lip.

CŒLOGYNE SPECIOSA.

AMONG the many interesting species that have recently flowered in the collection of Mrs. M. J. Neale, Oxton, Kenton, nr. Exeter, is Cœlogyne speciosa, two fine varieties of which we have received from Mr. E. Swinden, who has charge of the collection.

This species was discovered by Blume on the Salak Mountains, in Java, at an elevation of 3,000-5,000 feet, and first became known in European gardens in 1846 from plants collected by Thomas Lobb, one of which was figured by Lindley (*Bot. Reg.*, 1847, *t.* 23), who remarked that "the pale tawny sepals and petals, and the pitch-brown lip of this plant detract from its beauty, notwithstanding that they are relieved by a broad white column, and a pure-white termination to the lip, and that its flowers are nearly four inches in diameter when fully expanded. They have, however, a very singular appearance, and if they are produced in greater numbers will be attractive so long as the white remains unchanged."

One of the flowers from Mrs. Neale's collection agrees with the above coloured plate so far as the sepals and petals are concerned, but the coloration of the side lobes and disc of the lip is not pitch-brown, but brownish red; hence the plant may be distinguished as C. speciosa rubiginosa. The other flower is larger, and has the sepals and petals light olive green, the lip whitish with the typical reticulated pit-brown markings. It approaches the variety albicans, of which a coloured plate is given in the *Dictionnaire Iconographique des Orchidées*, and described in Veitch's Manual of Orchidaceous Plants.

Concerning Cœlogyne speciosa, the last-mentioned authority remarks that "the minute hairs forming the fringe of the crest of the lip are among the most beautiful microscopic objects imaginable, and which must be seen to be appreciated. These hairs are sometimes simple, sometimes dichotomously branched, but in every case are terminated by a cluster of unicellular stellate expansions of even greater delicacy than the pappus of many composites."

Cœlogyne speciosa alba is a pretty light flesh-coloured form, from which the usual brown markings have disappeared. It received an Award of Merit, R.H.S., March 28th, 1905, when exhibited by Messrs. Sanders.

Cœlogyne Colmanii is a garden-raised hybrid between C. speciosa and C. cristata, and was raised in the collection of Sir Jeremiah Colman, Bart., Gatton Park, Surrey. The cross was made on April 15th, 1900, the seed sown on October 1st, 1901, and the first flower opened on January 27th, 1907. The plant received an Award of Merit, R.H.S., Feb. 12th, 1907. Later on in the same year this hybrid also flowered in the collection of Mr. P. Wolter, at Magdeburg.

TWISTING OF THE OVARY.

THE interesting article in our last issue concerning the twisting of the ovary recalls Darwin's statement that "in many Orchids the ovarium, and sometimes the foot-stalk, becomes for a period twisted, causing the labellum to assume the position of a lower petal, so that insects can easily visit the flower; but from slow changes in the form or position of the petals, or from new sorts of insects visiting the flowers, it might be advantageous to the plant that the labellum should resume its normal position on the upper side of the flower, as is actually the case with Malaxis paludosa."

"This change, it is obvious, might be simply effected by the continued selection of varieties which had their ovaria less and less twisted; but if the plant only afforded varieties with the ovarium more twisted, the same end could be attained by the selection of such variations, until the flower was turned completely round on its axis. This seems to have actually occurred with Malaxis paludosa, for the labellum has acquired its present upward position by the ovarium being twisted twice as much as is usual."—*Fertilisation of Orchids.*

A similar case of the ovary having a whole turn or twist, thus bringing the labellum again to an upright position, is given by H. Bolus in reference to Disa elegans. He remarks, "this species is closely allied to D. Bodkini. Without doubt it belongs to the same group, which, before I knew this species, I called Orthocarpa, because of the untwisted ovary, and the resulting posticous lip. But in the present species the same result, or nearly the same, is produced in a curiously different way. The ovary has here nearly a whole turn or twist (in most Disæ it has a half-twist) and this, of course, brings the lip also into a nearly posticous position as regards the axis of growth. This is the only instance of the kind I have ever seen in the genus."—*Orchids of South Africa.*

EVOLUTION OF SPECIES.—In an interesting article on Orchis elodes, by Colonel M. J. Godfrey, F.L.S., which appears in the *Journal of Botany*, Nov., 1921, we read that "Linnæus was convinced that all forms of the modern genus Ophrys were varieties of one species, O. insectifera. . . . There was every excuse for Linnæus's view, for he believed that every species was a separate creation; and as he clearly saw that all forms of Ophrys must have sprung from one common origin, he had no choice but to regard them as belonging to the same species. The case is different now that it is recognised that species have been evolved from a common ancestor. The difference between a species and a variety is mainly one of *time*. If the common ancestor is distant, and especially if it is now extinct, two plants may justly be considered as specifically distinct, but if the variation

is only in minor points from a still existing species, the one can only be regarded as a variety of the other."

A SPIKE OF ORCHIDS.

JUST like a double row of crimson scarlet butterflies, lightly perched upon a slender curving stem, on tip toe for a flight, for all the world as though, alighting one by one, their gradually increasing weight had caused the fragile stem to bend, bowing in reverence beneath the beauty it was ordained to bear.

So real is the resemblance, so dainty the formation, that one finds oneself watching intently for a sign of life, waiting to see the little band dissolve and go flitting slowly through the air a blaze of crimson light. At last one realises that they are but flowers set along a stem, not butterflies at all, and then they seem more wondrous than they were before.

HAROLD RAVEN.

WILD ORCHIDS.

DEEP in the shady fastness of the forest, in the rich damp mould between the rows of trees that form the aisles of God's own church, grow the wild Orchids.

It was one evening in June, when the warm air was moist with falling fragrant dew, that I wandered into the forest. At once my eyes were dazzled by the sight of so much beauty of colour and form, and as I penetrated further into the wooded stronghold it grew still more beautiful, more truly wild.

No sound save the soft murmured crooning of the trees, the sleepy twittering of roosting birds, and occasionally a scurry of brown leaves as some startled rabbit leaped away in front of me.

I voyaged as a tired wanderer in some Elysian grove, thankful for the healing coolness of the scented breeze that fanned my brow.

Then it was that I came upon the crowning beauty of what I think must have been the altar of Nature's church; a little clearing bordered by tall mossed trees, the red mould of its soil serried with tiny crystal runnels of water, and dotted and grouped about it the creamy dew-kissed spikes of the Butterfly Orchis.

They rose a graceful pale green stem of twelves inches or so in height clothed with pointed, sharply-cut leaves, and bearing on each spike some ten butterfly-like blossoms. It was as though I had entered Fairyland, into the grove where slept the butterflies, and I stepped soft-footed, with bated breath, fearful lest I wake them from their rest. HAROLD RAVEN.

The Croft, Ruddington, Notts.

AN EARLY TEXT-BOOK.

ONE of the earliest, if not the earliest, text-books was published in 1845, under the title, "The Cultivation of Orchidaceous Plants, with remarks on their geographical distribution, and a select catalogue of the best kinds in cultivation," by John Henshall.

The chapter devoted to the benefit of two or more houses proves that the author possessed a remarkable knowledge of the subject for so early a date in the history of Orchid cultivation. "Now, as it happens," he states, "that Orchidaceous plants are obtained from many and various climates and seasons, it is not reasonable to expect, when we take the force of natural habit into consideration, that they will all of them begin to grow at one and the same period, bloom at the same time, or rest altogether at one season; not even if we endeavour to assimilate these seasons to those of our own climate; there will always be a number of them, in a collection of the least pretensions, that will be springing into activity and requiring excessive moisture and other stimulants; while another portions will be speedily advancing to maturity, and consequently demanding for their future welfare quite a contrary treatment; and a third will assume an intermediate station, in which flowers are produced, the brilliancy and duration of which are materially diminished when continued in an aqueous atmosphere."

With regard to heat and moisture, Henshall remarks that "moisture certainly exhibits the greatest effect upon plants, and in its proper appliance and withholding, rests the entire art of their cultivation. The practice of drying so thoroughly, I am persuaded, is very injurious to them, for during their resting season they require to be kept as sound as possible, to cause them to produce their flowers with sufficient strength."

LÆLIOCATTLEYA SWINDENI.—This new hybrid, the result of crossing L. Gwennie (Cowani × Jongheana), with C. Suzanne Hye (Gaskelliana alba × Mossiæ Wagneri), has been raised in the collection of Mrs. M. J. Neale, Oxton, Kenton, nr. Exeter. The flower is of moderate size, and pure white, with the exception of a very slight rose tinge on the front lobe of the prettily crisped labellum. The chrome-yellow area seen in the throat of most albinos in this case covers, in comparison to the size of the flower, a more extensive area, and constitutes an additional attraction. It is the first white variety that has appeared in this batch of seedlings. We name it after Mr. E. Swinden, who, previous to taking charge of this important collection, was for the long period of 37 years engaged in cultivating Orchids in the celebrated garden of the late Sir Trevor Lawrence, Bart., at Burford.

MORMODES LUXATUM EBURNEUM.

THE adjoining illustration shows a fine spike of this elegant species as it flowered in the collection of A. W. Wills, Esq., of Wylde Green, Birmingham, some few years ago. With some amateurs this plant presents no difficulties as regards cultivation. Mr. Wills' plants were brought into the warm house along with Dendrobiums as soon as the new growth made

MORMODES LUXATUM EBURNEUM.

its appearance, and was kept there until the flower-spike developed. The length of the inflorescence here depicted was 13½ inches, its greatest breadth 8 inches, and the number of flowers 23. After blooming freely for three successive years the plant rested for a season, so far as the production of flowers was concerned, but again produced good spikes during the

following seasons. After the growth was made up the plants were removed to a slightly lower temperature in the Cattleya house, and no more water was given than that actually required to prevent the bulbs from shrivelling.

Mormodes luxatum was originally described by Lindley in 1842, from a specimen which flowered in the colleetion of Mr. Barker, of Birmingham. It had been received from Mexico, having been sent home by Ross, who collected some masses of it in the neighbourhood of Valladolid. It was described as having pale lemon-yellow, fleshy, rather globular flowers, nearly three inches in diameter, but so distorted by the dislocation of parts that it would be difficult to ascertain their real nature were it not for the lip. The generic name is taken from *mormo*, a goblin, in allusion to the strange appearance of the flowers, which, we may add, are sweetly scented.

Reichenbach recorded in 1878 a majestic peduncle, nearly three feet long, with twenty-five flowers in the collection of Sir Trevor Lawrence, Bart., at Burford, Dorking, and remarked that he had only once before seen it alive, when it flowered with Messrs. Backhouse, of York. Apparently he was not much struck with it, for he added: "There is indeed a certain Orchid love required for the appreciation of this plant, for Mormodes are not in fashion." But Sir Trevor Lawrence replied: "I cannot altogether agree with the learned Professor that it requires a special 'Orchid love' to like Mormodes luxatum. It is really a grand plant—stately in flower and foliage, delicate in its pure ivory tint and in its scent, and quaint in its pure shell-shaped lip. To my eyes it possesses many varied beauties, enough of them to captivate all tastes." (*Gard. Chron.*, 1878, p. 396).

In 1885 Messrs. Sanders flowered a variety, having numerous small reddish spots on the inside of the sepals and petals. It was recorded as var. punctatissimum.

ORCHID IMPORTING.—It often happens that when being removed from their native resorts, the plants are injured by the collectors, and by the natives whom they employ to gather them from the high trees, and other places difficult of access. They are frequently packed in sacks and transported on the backs of mules, in order to reach the seaport for shipment; and the native men who help to pack them, are indifferent as to how the bulbs and foliage, which require so much care, are handled. The voyage these plants have to undergo is often very detrimental to them. Sometimes they are placed on a part of the vessel where they get too much dry heat, or where they may get the salt water on them, and these injuries often cause them to rot, or the very life to be shrivelled out of them. A good proportion of the importations, however, seem to endure, notwithstanding the treatment they receive after their arrival here.—*Williams' Orchid Manual.*

ANGRÆCUM EBURNEUM AND A. SUPERBUM.

IN the year 1804 Angræcum eburneum was described by Bory (*Voy. Iles Afr.*, *I.*, 359, *t.* 19), who found it in the Island of Bourbon, and named it in allusion to its ivory-white lip. The flowers have segments about 1¼ to 1½ inches long, the lip ovate and shortly acuminate, and the spur about 2½ to 2¾ inches long. The plant is not known to occur in any other locality. Angræcum virens, which appears to be a smaller growing plant, and with the disc of the lip stained with pale green, first appeared in Messrs. Loddiges' nursery in 1847. It is figured in the *Botanical Register*, 1847, *t.* 19, and also as A. eburneum var. virens in the *Botanical Magazine*, 1860, *t.* 5170.

Angræcum superbum was figured by Thouars in 1822 (*Orch. Iles Afr.*, *t.* 62), and is only known as a native of Madagascar. The flowers are much larger than the preceding, the segments 1½ to 1¾ inches long, the lip as broad or broader than long, and the spur 2½ to 3¼ inches long, and rather stout. Lindley figured it in 1832 (*Bot. Reg.*, *t.* 1522), but under the erroneous name A. eburneum, and remarked: "It was also met with at St. Mary's, Madagascar, by the unfortunate Forbes, by whom the only plant known to exist in Europe was sent to the Horticultural Society of London, in whose garden at Chiswick it flowered in November, 1831." A. superbum is figured in *Lindenia*, *V.*, *t.* 236, and also in the first volume of the *Orchid Album*, 1882, *t.* 41, with a note that the plate was prepared "from a very fine specimen, producing three well-developed spikes, in the collection of de Barri Crawshay, Esq., Rosefield, Sevenoaks, who is a great lover of Orchids."

Angræcum Veitchii (A. sesquipedale × A. superbum) was raised by Messrs. Veitch & Sons, and exhibited by them at the Royal Horticultural Society, January 10th, 1899. It bore a raceme of three flowers and one bud, and constituted the first artificial hybrid in the genus. A First-class Certificate was given to the plant, and a Silver Flora Medal to the raiser, Mr. J. Seden. A. eburneum was originally given as one of the parents, but this arose through confusion between that species and A. superbum.

Angræcum Wolterianum (A. sesquipedale × A. eburneum) was raised by Mr. P. Wolter, of Magdeburg, and by reason of one parent being the true A. eburneum, it differs from A. Veitchii. The cross was made in 1909, the seed sown the following year, and the first flowers appeared in March, 1918, when the plant was eight years old. An illustration of it and description by Dr. Schlechter appeared in the *Orchis*, 1918, p. 60.

CHELSEA SHOW.—This important exhibition will be held on Tuesday, May 23rd, and two following days.

ODONTOGLOSSUM CRISPO-SOLON VAR. CARMINETTA.

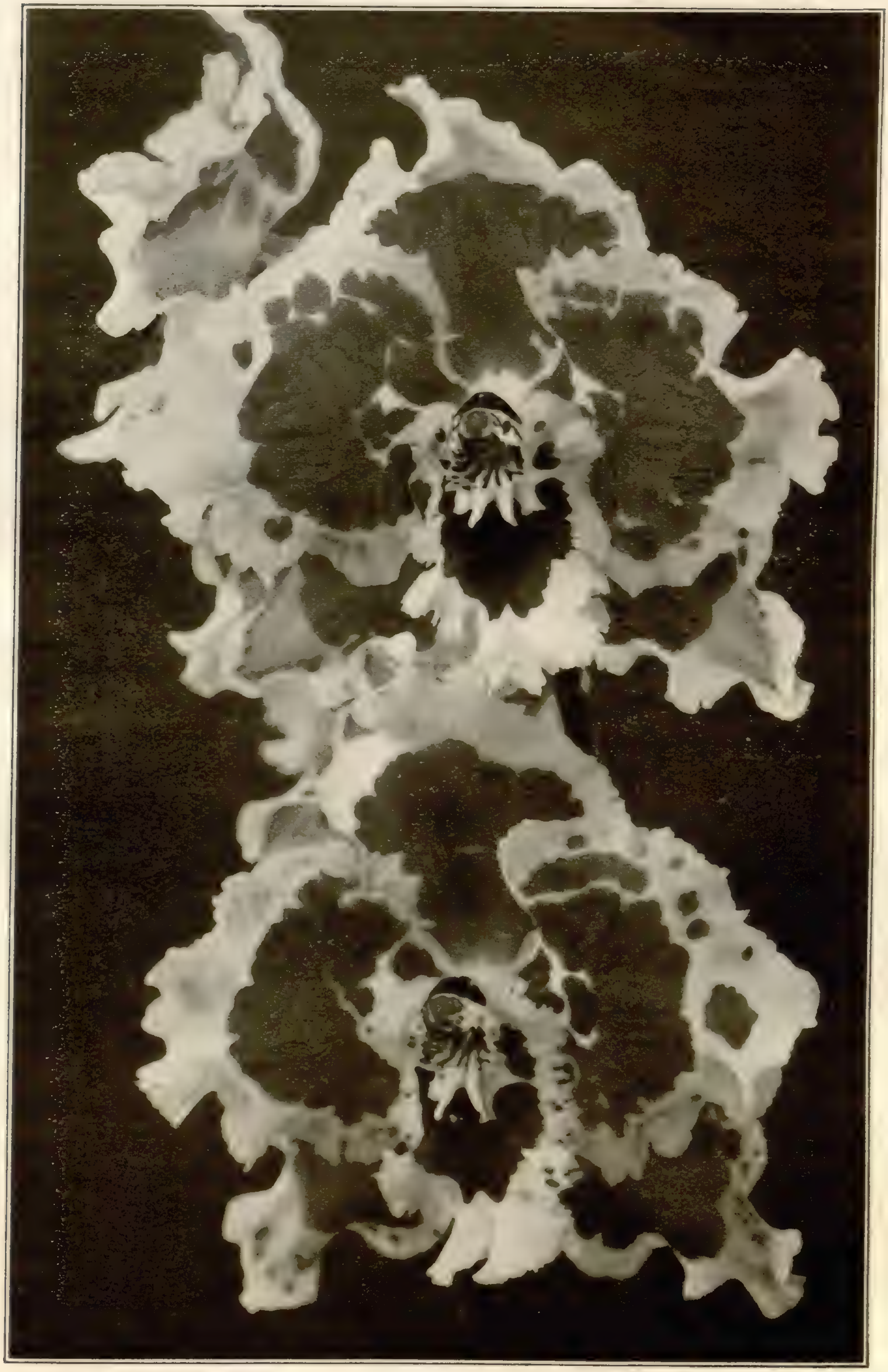
THE name O. crispo-Solon indicates that this plant is the result of crossing O. crispum with O. Solon, the latter an artificially raised hybrid between Adrianæ (crispum × Hunnewellianum) and ardentissimum (crispum × Pescatorei). A first glance at this parentage does not indicate that more than the three species, crispum, Pescatorei, and Hunnewellianum are involved. But to these must be added the species luteopurpureum, for to it the blotching of the early-day "crispums" is due, and in the making of the above-mentioned ardentissimum a heavily blotched variety of "crispum" was surely used. These so-called crispums are really forms of O. Wilckeanum, or, in other words, natural hybrids between crispum and luteopurpureum, inheriting the white ground of the former parent and the spotting of the latter.

About the year 1898 imported plants of O. crispum from a new locality began to flower. Spotted varieties again made their appearance, and were at first also described as crispums, but it was not long before the spotting was found to be due to the effect of a second species, in this instance O. Hunnewellianum. All these natural hybrids between crispum and Hunnewellianum belong to the section Adrianæ.

From the preceding remarks it is evident that almost all the noted blotched crispums of the past belong either to the section Wilckeanum (crispum × luteopurpureum) or to Adrianæ (crispum × Hunnewellianum). But with the raising artificially of blotched Odontoglossums greater opportunities than in former times presented themselves. It is a remarkable fact that O. crispo-Solon is actually a combination of the two methods that Nature herself adopts in the production of blotched "crispums," namely, the influence of luteopurpureum and Hunnewellianum, for both are utilised in the production of the wonderful variety illustrated in the adjoining plate.

There now remains to be considered the influence of O. Pescatorei. It is somewhat remarkable that at a time when blotched Odontoglossums were very much in request that anyone should have crossed a blotched crispum with the white Pescatorei instead of with another blotched flower. But about the year 1902, as many enthusiasts of the genus remember, the hybrid ardentissimum (crispum × ardentissimum) made its appearance. The result was a surprise, for instead of the blotching of the crispum being lessened by the effect of the white Pescatorei it was in many cases increased. Another effect of Pescatorei is to add a pleasing violet tinge to the blotching and surrounding area. The portion of the flower in the top left hand corner of the adjoining plate depicts this coloration on the back of the segments, a condition generally to be seen in varieties of ardentissimum.

The photographic illustration of O. crispo-Solon shows the wonderful



ODONTOGLOSSUM CRISPO-SOLON VAR. CARMINETTA.

variety Carminetta that was exbibited by Messrs. J. & A. McBean at the Chelsea Show, 1921, and to which the Orchid Committee recommended the high award of a Gold Medal. The spike carried four flowers, which are reproduced exactly life size, the blotching being of reddish-purple colour.

ODONTOGLOSSUM DIAMOND VAR. PERFECTION.

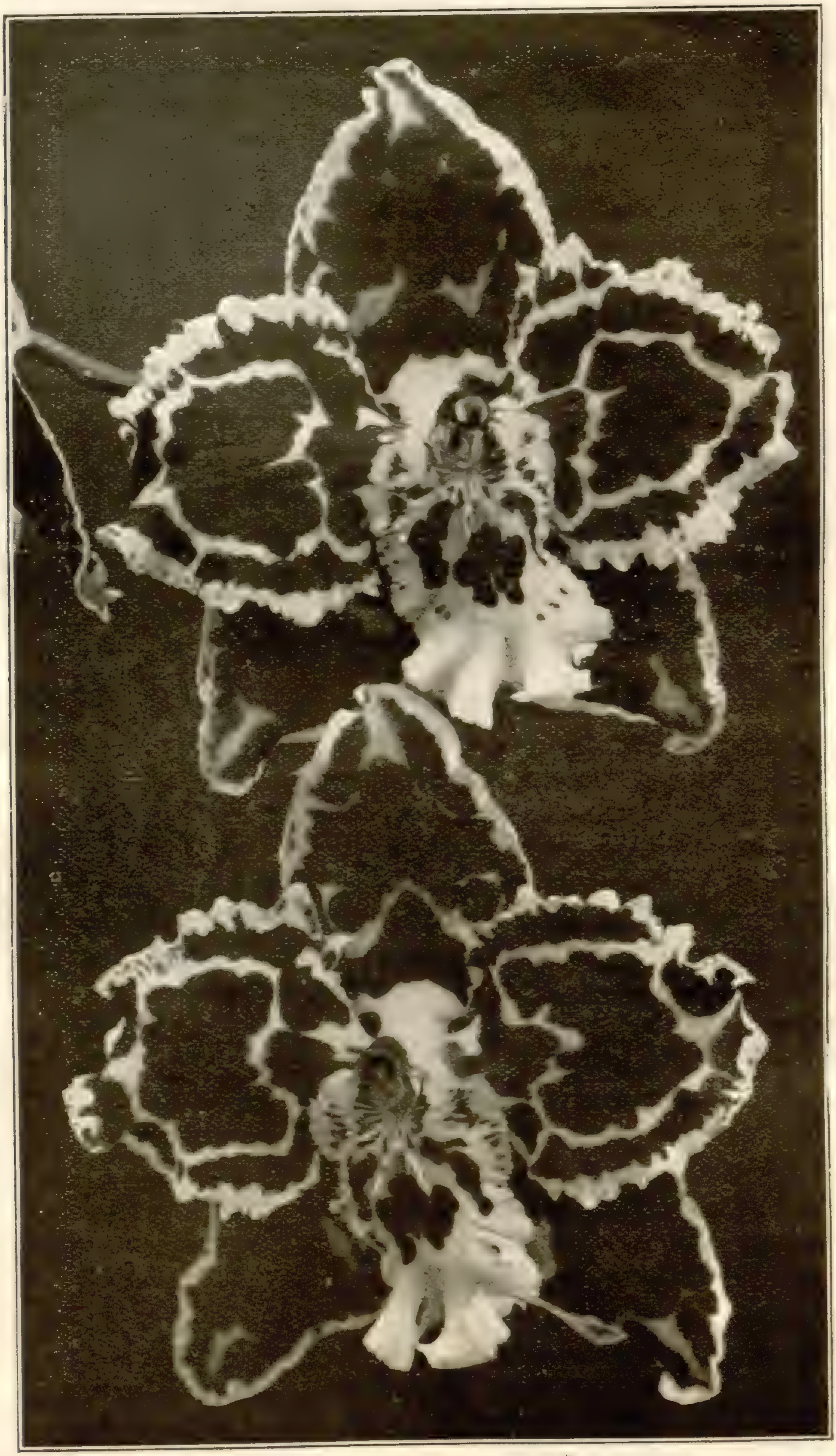
THE handsome hybrid between O. King Arthur and O. eximium Holfordii was first recorded as O. Diamond in April, 1920, when an Award of Merit was given to a fine form exhibited by the raisers, Messrs. J. & A. McBean, at the Royal Horticultural Society. On 5th April, 1921, a First-class Certificate was unanimously awarded to the variety Perfection, which was then in flower for the first time with a spike of four blooms, two of which are reproduced exactly life-size in the adjoining illustration. The rose-tinted sepals and petals are heavily blotched with bright crimson-purple, having a reddish over-tint; the lip whiter, with markings of similar colour, and a yellow spiny crest. Being of thick texture, the elegant flowers lasted a long time in perfection, all the segments maintaining a flat and well-displayed nature.

In the early days of the enthusiasm for blotched Odontoglossums, new varieties were only obtained through fresh importations of plants from South America. Much variation is shown in the flowers, those having the blotches arranged in symmetrical style always obtain the highest appreciation. Especially is this the case with regard to the petals, which, in the expert's opinion, are at their best when the central area is occupied by a large horse-shoe shaped blotch of crimson-purple. On rare occasions the petals have an outer ring of colour which considerably increases the high value set upon these blotched varieties.

When the flowers of O. Diamond var. Perfection first opened, it was at once apparent that another very handsome Odontoglossum had been produced by Messrs. J. & A. McBean. The illustration portrays the extensive and symmetrical blotching of the segments, the well-defined zone of colour on the marginal area of the petals being an additional point of merit.

A complete analysis of the ancestry of O. Diamond is rendered difficult by the fact that the exact parentage of the seed-bearing plant, O. King Arthur, is unrecorded, but there is strong evidence in it of O. Harryanum, so it probably belongs to the amabile section. O. eximium, the pollen parent. is a remarkably fine variety of the well-known hybrid between ardentissimum (crispum × Pescatorei) and crispum.

When the first garden-raised Odontoglossum hybrids appeared no one ever thought they would reach the present high state of perfection in so short a space of time. They constitute a wonderful achievement.



ODONTOGLOSSUM DIAMOND VAR. PERFECTION.

AN AMATEUR'S EXPERIENCE.

By JOSEPHINE R. WALKER.

AFTER reading my January article I should like to explain that though we never admit air by opening any ventilators, it is because our conservatory, on the sides, has the glass resting on edge, not overlapping, consequently there are any number of chinks and spaces through which air is always entering. In the autumn and winter, when the wind is south, it is as airy as the mountain tops. Perhaps this has something to do with our success!

Though our experiences with Dendrobiums under present conditions have been sad, we have always had a love for them, and have now built, inside the conservatory, a small glass house in one corner over the right-angle run of double pipes. It looks quaint, and is irreverently christened by my small son, the "Monkey House." Anyhow, we find we can maintain 70° by day and 65° by night. A kind friend has fitted us up with some Dendrobiums, so we are going to have another try, and will report progress in due time. The same friend has also sent some Vandas, so we are getting ambitious, and going to have a try with them.

The lantern-roof of the conservatory is about 25 feet high, distinctly airy, and in the summer very hot and moist; it has occurred to us before that it might suit the Vanda family very well. But there was always the difficulty of getting to them, so having received the plants we have had to devise a means. We have constructed a small shallow cradle of light wood, with a small water trough in the bottom, which we shall fill with pebbles and water in the summer. Three pulleys on the beams, and three ropes connected to one central rope enable us to haul it up and down with the greatest ease, so we hope the plants will appreciate our efforts to give them the conditions as much as to their liking as possible.

We have just been breaking up and repotting some of the Mexican Lælias. We thought we should like some large plants, so several were potted up together, but it does not seem to answer so well as a single plant. Some pieces are more robust than others, and root quicker and stronger, so that they require water earlier and in greater quantity. We have now repotted them all singly in small pots, and in spite of keeping them very much on the dry side many of them are throwing their new roots very nicely. They have all been reduced to three bulbs and seem to grow stronger when thus treated. The back bulbs generally grow when put in a little more heat. We pot them very firmly in broken root fibre, and later give them a surfacing of sphagnum. They are then placed close to the glass, where they stay throughout the season without shade at all. The bulbs have never been better than this season, due to the tropical sunshine of last summer. Of

course, I must say that our Lælias have the advantage of never losing any of their roots by woodlice or other pests, perhaps because they are hung up, though we have not seen woodlice at all. I think these pests very much resent the amount of water we are always throwing about. The only other pest we have is the small white tomato fly occasionally, and I do not think they do any real harm.

We have failed for years with our Cœlogynes. We have tried them in all sorts of pots and positions. I think the trouble has been due to not giving them enough water. However, we have made another effort by putting them in baskets and standing them on the ashes in a position of shade. I have always envied the possessor of the beautiful C. cristata when in bloom, which, in my opinion, is one of the loveliest of all Orchids, for it flowers at such a useful season of the year.

We are still repotting the Cypripediums as they go out of flower. They mostly all seem to require it. We get the best results by giving them just enough pot room for one year. C. insigne var. Harefield Hall, of which we are building up quite a nice stock, seems to possess a creeping rhizome, and is difficult to keep compact, so we just divide them and pot up the pieces singly. We have been struggling with C. Maudiæ magnificum and C. callosum Sanderæ, but they seem to require more heat than we can give them, so now they repose, and look distinctly happier, in the "Monkey House," which perhaps will be useful as a hospital.

CŒLOGYNE WETTSTEINIANA.—This plant was received from the Botanic Garden of the University of Vienna by Dr. R. Schlechter, in December, 1919, and is described by him as a new species in "*Osterreichischen botanischen Zeitschrift*, Jan., 1920." It is a native of Annam, and allied to C. Rhodeanæ, Rchb. f.

STANHOPEA PURPUSII.—This new species, a native of Mexico, and allied to S. oculata, was presented by Mr. C. A. Purpus to the Botanic Garden at Darmstadt, where it flowered in September, 1913. A full description by Dr. R. Schlechter and analytical drawings of the flower were published in the *Orchis*, Dec. 15th, 1916.

JENMANIA ELATA.—This plant was sent from Trinidad by Mr. Prestoe, and flowered at Kew in September, 1870, after which it was lost sight of until dried specimens were collected on the Pomeroon and Demerara Rivers, British Guiana, by Mr. Jenman, after whom the genus is named. It is a terrestrial plant, tall in habit, the leaves radical and much like those of Neuwiedia. The yellow flowers, over an inch long, are arranged in a lax panicle.

AN AMATEUR'S COLLECTION.

BY HAROLD WIGAN.

I WAS very much interested in the article in the December issue by Mrs. Walker. Firstly, because she has a greenhouse facing south, and, secondly, because a great number of her Orchids were purchased at sales, and in very poor condition. My experiences were the same, for out of 370 plants at least 200 were purchased at sales. I started on these at the beginning of April; in fact, it so happened that the first sale was on April 1st, but I am glad to say it started at one o'clock.

I had no knowledge of Orchids, except that for some years I had a few Cypripedium insigne and also some Cœlogynes, but my head man never got them to flower properly. (I do not have a head gardener now). So that I bought at the sale with no knowledge of what I was getting, whether the plants were suitable for the house or otherwise. However, up till now, I have only had to throw away two plants, and, as far as I can see, perhaps three or four may have to go. With these exceptions, all the plants are looking well and growing well, whereas most of them were a sickly yellow when first obtained.

Now my house is exactly the opposite to Mrs. Walker's, inasmuch as it faces due north, against a wall which is one foot higher than the top of the house. Inside I placed asbestos sheets on the battens, with a ledge at the sides and ends, and about one inch or so of red ash from the waterworks' boilers near here. This appears to answer well, and the plants want very little water these days, about twice a week for Cypripediums, and every ten days for Odontoglossums, and once in three weeks for Cattleyas. I try to keep a minimum temperature of 50 degrees, but I have not managed it very well lately, as the winds have been very cold and the weather very changeable. One difficulty I find is that some pots are quite a quarter full of crocks, some one-half, and others almost two-thirds, while the variation of soil in the Cypripediums is considerable.

This house only gets a small streak of sunshine in the early morning, and only in the summer months. From the west it gets the full afternoon sunshine in the summer, but little or none now. The west end was shaded by summer-cloud until October.

As far as I can see, all the Orchids approve of their home, but it is too early to say much about the Dendrobiums. Most of these were newly imported, and may want more sun next year to ripen their growths, in which case I have a south house (a vinery and also a cucumber house) in which to put them. I fancy the Cattleyas should also have a rest in a sunny house in their due season.

I found Miltonias were very restless last summer. I suppose it was the

intense heat, as after flowering in April they flowered again in September, and the bulbs being unripened the flowers and stems were stunted. This month I have a Lycaste Skinneri with five blooms, two of which are on one stem, and both good specimens. Cypripedium nitens Drewitt's variety, C. Archimedes, and C. Leeanum var. Chester Rogerson are now in bloom, and each plant has two blooms on one stem, in addition to one or two others. My Calanthes, which include C. Sanderiana and C. William Murray, have all shed their leaves, but have not flowered this last autumn.

Now a word as regards books. Up till now I have not found one up-to-date. All of them say Orchid peat, so much, and sphagnum moss, so much, etc. I have yet to discover where Orchid peat comes from, and what it is like. Messrs. Charlesworth, however, tell me that osmunda is now used where peat was used in the old days. I wonder whether anyone has experimented with peat-moss. Last April I put an odd piece of Cypripedium insigne in this material, and the root growth is surprisingly good. I also tried a piece of Cœlogyne cristata, but have not yet examined this plant as regards the root action. Last week I bought an Odontoglossum from a small nurseryman who had purchased some a few years ago at a private house sale. The pot was half full of very ordinary garden soil and stones, not forgetting two or three worms. Apparently the plant had looked in a bad state, so he had filled up the pot with woodland moss. I found no roots at all in the soil, but very nice new roots had spread themselves in all directions in this moss, showing very clearly that moss was to its liking, even though of the wrong sort.

By the way, is there any process by which sphagnum moss can be treated to rid it of small slugs and snails before being used. I am wondering if laying it on wire netting with vaporite underneath would do it, as I have suffered a bit from them, the damage being done to the flower before the stem was long enough to put cotton wool around it.

I hope this letter will catch the eye of some people living in towns who have a little greenhouse, probably facing north, and that it will have the effect of starting them on what I consider the most interesting of hobbies, and not an expensive one. I find the general idea still is that one must be a millionaire to buy Orchids, and to possess hot-houses eating up coal mines to grow them in. It is a great pity to my mind, and I think that the subject should be more discussed in the papers, and possibly by means of lectures given at local horticultural societies. Also, in due course, cups and prizes to amateurs who do not employ any gardener for their Orchids.

PANISEA TRICALLOSA, a native of Assam, bears flowers of pale, translucent, yellowish green, with three yellow calli on the disc.

THE AMATEUR'S PAGE.

A REQUEST for a selection of Cypripediums suitable for a cool-house comes from an amateur who possesses a greenhouse of the old-fashioned type. The rafters are thick and heavy, the squares of glass much smaller than now used, and the amount of hot-water piping is only sufficient to maintain an average winter temperature of 50°. In addition to this, the atmosphere is often polluted with soot from the factories of a large town.

A greenhouse with the above conditions will be found quite suitable to the welfare of many Cypripediums, and, in fact, will yield results not much below those obtained in a modern structure if the plants be selected with some consideration as to their cultural requirements.

It may seem elementary advice to recommend the well-known Cypripedium insigne, for it so willingly accommodates itself to almost every kind of soil and treatment. If one felt so desired, a whole house could be filled with different forms and varieties, and no two of them exactly similar. From the type form right up to the giant variety known as Harefield Hall, and from the heavily-spotted varieties to the beautiful clear primrose-yellow of the variety Sanderæ, an almost endless series can be acquired. Probably in no other Orchid has so much variation been seen.

C. venustum, with mottled foliage, and C. villosum, with broad glossy petals, are both useful species for a cool house. Their real value, however, lies in the more attractive hybrids that have been raised from them. Among these the primary hybrid nitens (insigne × villosum) and Crossianum (insigne × venustum) are both noted for the comparatively low temperature in which they may be successfully cultivated. Although C. Spicerianum is often grown in a cool house, it is never seen there at its best, for it requires a slightly higher temperature to bring out to the fullest extent the attractive qualities of its flowers. But there are several excellent hybrids between it and the previously mentioned cool-house plants, and these being intermediate in character require a temperature only slightly above that needed for the insigne section. Several attractive varieties of C. Leeanum (insigne × Spicerianum) and of C. Lathamianum (villosum × Spicerianum) are readily procured from the trade growers, and as they possess a robust constitution it is not long before larger plants are obtained, and with a consequent increase in the number of flowers.

A pretty little gem is seen in C. Fairrieanum, which, however, is not in itself suitable for cool-house treatment, but many of its charms are carried forward in hybrids between it and the cool-growing insigne. The hybrid known as Arthurianum (insigne × Fairreanum) succeeds perfectly in a cool house. Of course, it will occur to every observant cultivator that any plant containing in its parentage a species accustomed to a comparatively higher

temperature will be best accommodated by being placed in the warmest end of the house.

Although the Cypripediums mentioned above are only a few of the many that can be cultivated in a cool house, they will serve as a guide to the

C. INSIGNE ERNESTII.
C. INSIGNE SANDERÆ.
C. MINOS.
C. ARTHURIANUM.
C. LEEANUM GIGANTEUM.
C. TITYUS.
C. SPICERIANUM.

selection of numerous hybrids that have been built up, sometimes through several generations, from the cool-growing species. Consequently, any amateur who may care to spend a little time in studying the parental records will be able to extend the list to almost any desired extent.

NEW HYBRIDS.

HYBRID.	PARENTAGE.	EXHIBITOR.
Angræcum Wolterianum	sesquipedale × eburneum	P. Wolter.
Brassocattleya Paulæ	B. Perrinii × C. aurea	Baron Furstenberg.
Brassocattleya Janckeana	B. tuberculata × C. Warscewiczii	H. Jancke.
Brassolæliocattleya Doris	Bc. Digbyano-Mossiæ × Lc. Fascinator	Charlesworth.
Brassolæliocattleya Latefa	Lc. Fascinator × Bl. Suessa	Charlesworth.
Brassolæliocattleya Odetta	Bc. Mad. Maron × Lc. Dominiana	McBean.
Cattleya Snowclad	Mulleri × intertexta	Sanders.
Cattleya Ultor	Robert de Wavrin × Warscewiczii	Hassall.
Cattleya Zora	Percivaliana × Gaskelliana	Hassall.
Cypripedium Marcato	Alcibiades × Sir Wm. Chance	McBean.
Læliocattleya Euryoda	Lc. Eurydice × C. Rhoda	Charlesworth.
Læliocattleya Idona	L. pumila × C. O'Brieniana	McBean.
Læliocattleya J. Stanley Todd	Lc. Phœnix × C. Trianæ	Sanders.
Læliocattleya Lucienne	C. Daphne × Lc. St. Gothard	Charlesworth.
Læliocattleya Oriflamme	Lc. Thyone × C. Rex	Armstrong & Brown.
Læliocattleya Phineas	Lc. St. Gothard × Lc. Phœnix	McBean.
Læliocattleya pulchella	L. Crawshayana × C. velutina	Baron Furstenberg.
Læliocattleya Swindeni	L. Gwennie × C. Suzanne Hye	Mrs. M. J. Neale.
Læliocattleya Urania	Lc. eximia × C. Warscewiczii	Hassall.
Odontioda Carex	C. rosea × O. Uro-Skinneri	McBean.
Odontioda Alcazar	Oda. Hippolyta × O. l'Empereur	Charlesworth.
Odontioda Beryl	O. eximium × Oda. Wilsonii	Charlesworth.
Odontioda Orthia	O. Louise × Oda. Madeline	Charlesworth.
Odontioda Saga	Oda. Elissa × O. Doris	Charlesworth.
Odontioda Vera	O. Elissa × Oda. Joan	Charlesworth.
Odontioda Vesta	Oda. Charlesworthii × O. Prince Albert	Charlesworth.
Odontioda Zarina	O. crispo-Harryanum × Oda. Chanticleer	Charlesworth.
Odontoglossum Arabic	eximium × Midnight	McBean.
Odontoglossum Agapetum	amabile × Maillardianum	Charlesworth.
Odontoglossum Ithone	Aglaon × Dusky Monarch	Charlesworth.
Odontoglossum Terentia	Maillardianum × illustrissimum	Charlesworth.
Odontoglossum Urodora	Uro-Skinneri × Dora	P. Smith, Esq.
Odontoglossum Venada	crispo-Harryanum × Aglaon	Charlesworth.
Odontonia Eurydice	M. Bleuana × O. Aireworth	Charlesworth.
Odontonia Leila	M. Bleuana × O. promerens	Charlesworth.
Odontonia Thisbe	M. Bleuana × O. crispum	Charlesworth.
Odontonia Verona	M. Bleuana × O. Rolfeæ	Charlesworth.
Sophrolæliocattleya Anzac	Lc. Dominiana × Slc. Marathon	Charlesworth.
Stanhopea assidensis	tigrina × Wardii	Dr. Goldschmidt
Vuylstekeara Eros	M. Warscewiczii × Oda. Charlesworthii	Charlesworth.
Vuylstekeara Eva	Mta. Harwoodii × Oda. Brewii	Charlesworth.
Vuylstekeara Nora	Mta. Harwoodii × Oda. Cooksoniæ	Charlesworth.
Vuylstekeara Ruby	Mta. Harwoodii × O. Ashworthianum	Charlesworth.

CHARACTERS OF ORCHIDS.—Orchids are distinguished from all other plants by four chief characters :—(1) By the consolidation of the stamens and pistil into a common mass, which is called the column; (2) by the suppression of all the anthers (normally six), except one, in the vast majority of the Order, or except two in Cypripedieæ; (3) by the peculiar condition and arrangement of its pollen and the anther which contains it; (4) by the very general development of one of the petals (the lip, or labellum) in an excessive degree, or different or unusual form.—H. BOLUS, in *Orchids of the Cape Peninsula.*

CULTURAL NOTES.

BY J. MACKAY, ORCHID GROWER TO JAMES J. JOICEY, ESQ., THE HILL, WITLEY, SURREY.

WITH the advance of the present month we can safely say we are past the worst of the dull winter period. This being the case, it is not unreasonable to expect a corresponding increase of light and sunshine. This will have a tendency to gradually encourage activity amongst the plants in the way of flower and new growth. They should, however, not be unduly excited into growth by increase of temperature and moisture, everything in this direction should be done gradually, or the result will be far from satisfactory. The weather conditions cannot yet be relied upon. A spell of mild, spring-like weather may quickly be followed by a sharp nip of winter. During the daytime, with the increased sunshine, the temperatures will rise, and providing there is sufficient air and moisture to balance matters, this will do no harm. At the same time, avoid letting the hot water pipes become too warm, and with the appearance of continued sunshine, prevent any excess of fire heat, a most unnecessary evil at this time. With regard to ventilation of the houses, care is necessary to avoid draughts, for bright sunshine is often accompanied by very cold winds.

The busy season with regard to repotting will very soon be with us again, and on the way this operation is performed will depend the future health of the plant. When repotting is decided upon, the best time for this operation is when new growth or root action is commencing from the base of the growth or pseudobulb. It is always necessary to use clean receptacles, either pots or pans will suit most plants, whilst a few are better grown in baskets. The drainage or crocking of these should be done in such a way that the material or compost will remain sweet and porous, and therefore not liable to become water-logged and sour. The various materials, such as AI fibre, osmunda fibre, good fibrous loam, and sphagnum moss, should be got together. These form the principal mediums for most plants, and may be used and mixed according to directions in future cultural notes. The compost should be well mixed before using, and, when potting, work the material carefully between the roots, making sure that these are not cramped together in one place, but distributed regularly about the receptacle. It will be found necessary to fix some plants firmly whilst repotting, and in this case the stems should be secured by neat sticks, or if the plant is grown in a pan or basket, to the wire suspenders. The length of time that the compost of a newly potted plant will last in a sweet, healthy condition depends greatly on the quality of the compost used and the method of watering adopted, together with perfect drainage. Never saturate the new compost immediately on repotting, but rather gently spray

the surface with the syringe, and keep the same moist, with its surroundings, for some time; this will prevent shrivelling and loss of foliage until the plant becomes re-established.

WARM HOUSE ORCHIDS.—Many plants in this house are beginning to move in the way of growth or flower, and will therefore soon require attention. Such plants as Angræcum sesquipedale, Vanda suavis and V. tricolor are already showing flower spikes, and in consequence will require slightly more moisture, both at the roots and surroundings. After flowering, and repotting is necessary, they may have attention. A few of these plants may have become somewhat leggy, or have lost a few lower leaves; in these cases it will be best to cut off the bare stem in order to make the plant more shapely or presentable. The ordinary pot is preferable to baskets for the majority of this family, as the roots are much less disturbed than when baskets are used. When repotting, place some large crocks at the bottom, and insert the plant, gradually working in clean crocks amongst the roots to within two inches from the top, then finish off with equal parts osmunda fibre and sphagnum moss. After repotting, little water will be required beyond occasional spraying of the compost and surroundings until such time as the growing conditions become more genial, when they may have more copius supplies, especially during the summer months, after which time the quantity may be gradually reduced. Plants of the Aërides or Saccolabium family which are inmates of this house may also be given attention at this time, in the way of top-dressing or repotting. These plants require all the light possible to produce vigorous and matured growth so that they will give the best results when flowering. Too much shade is often the cause of fine racemes of flower not being produced.

Cœlogyne cristata and its varieties are now pushing their spikes, and a a little more water should be given to assist their development. Care should be taken to keep the water from the spikes, as these are very apt to damp off. An intermediate temperature will suit them, both for growing and flowering purposes. When the flowering season is finished, any potting that is necessary may be done, but do not disturb the plants unless the compost is in a bad condition or they have outgrown their receptacles. Cœlogynes are not deep rooting plants, and in consequence pans are preferable. For a compost use osmunda fibre, peat, fibrous loam, and sphagnum moss in equal parts. In making up the plants again into specimens arrange the growths evenly over the pan, and use pegs to hold the bulbs in position until such time as they begin to root and become established in the new compost. After repotting, give them a position in the warm house, apply water sparingly, but spray the plants overhead at least once a day, more especially when the weather is congenial for this operation.

Cattleya Trianæ will be showing its flowers to the best advantage this

month. It is one of the freest of Cattleyas to grow and flower, and forms a most useful and beautiful species, and as a parent it is found in quite a large number of hybrid Cattleyas and Læliocattleyas. After flowering, it soon commences to root and grow, when repotting can be undertaken. For compost, use equal parts osmunda fibre, AI fibre, and see that the plants are secured and potted firmly.

DENDROBIUMS.—Many of the D. Wardianum, D. nobile, and various hybrids are beginning to show flower buds on the stems. These should be assisted to develop by giving slightly more water at the roots and in the atmosphere. They will give better quality flowers if allowed to develop gradually and without the assistance of much fire heat. After flowering, and until new growth commences, give them quiet treatment for a time, when repotting may be done if necessary. D. Phalænopsis, D. formosum, D. bigibbum, and D. superbum, which have now finished flowering in the warm house should, from now and until new growth commences, be given only sufficient water to prevent the pseudobulbs from unduly shrivelling.

ODONTOGLOSSUM HOUSE.—The various species and hybrids contained in this house being at the present time in various stages of growth, will need constant attention in the way of watering and maintaining suitable atmospheric surroundings. A good many are pushing flower spikes, which must be protected from the ravages of thrips by placing cotton-wool around them and laying traps of bran and lettuce leaves about the plants and stages. See that the plants get all the light available at this time, and keep a buoyant atmosphere in the house by admitting air on all favourable occasions.

CATTLEYA CHOCOENSIS.—When collecting Orchids in the Cordilleran area, Mr. J. E. Lager, of Summit, New Jersey, came across the home of Cattleya chocoensis, which, unlike many other Cattleyas, occurs in forests on level land which is very swampy, and where the trees are stunted and overgrown with moss. "Here I saw the most beautiful sight it has been my fortune to see; in these jungles the plants grew by the thousands, the trees being literally covered with them and in full bloom. I particularly remember that I got my mule under a tree, and, sitting in the saddle, picked a large bunch of flowers; these were particularly fine and large, so different from what we see them under culture, where they only half open. The treatment we give this plant under cultivation probably has something to do with this. Where they grow it is very warm and humid. I noticed in the early morning, as soon as the sun reached the forest, a dense mist would rise from the ground and would envelope everything; this would gradually disappear as soon as the sun became stronger.—*Trans. Mass. Hort. Soc.*, 1907, *i. p.* 37.

CYPRIPEDIUMS FROM WESTONBIRT.

(*Concluded from p.* 25.)

C. GOLDEN Fleece var. Westonbirt is very similar to the preceding, the sepals and pouch appear to have a tinge of orange in their gold and the pin-like spots of insigne Sanderæ are evident on the dorsal.

C. Viking (Buchanianum × illustre). Certainly one of the most distinct Cypripediums yet obtained, clear in outline, well proportioned, altogether charming.

C. Ballet Girl. Parentage unknown, but in size and shape strongly resembling a Leeanum. As in the variety Muriel II. the inferior sepal is abnormal, much enlarged, white, lightly spotted with rose and shaded with green centrally. Dorsal sepal white, with the central area spotted with minute red dots, tinged with green at the base, petals lined, spotted and suffused with soft brown, shading to yellow-green, pouch warm brown.

C. Garibaldi (Bronzino × Earl of Tankerville) and C. Mario (Draco × Earl of Tankerville) have, as may be imagined, a somewhat general appearance, both having bold shapely flowers and with petals and pouch warm with red-brown. Although in each case the dorsal sepal is white, that of Garibaldi has the lower area a vivid green, carrying bold blackish spots, while that of Mario has the green area confined to the extreme base, and the spots, equally bold, are deepest crimson.

C. Lord Wolmer var. Westonbirt (Hera × Leeanum), conspicuous by reason of the bright colouring of the petals and pouch, and the deep rose-red spots on the pure-white of the dorsal sepal.

C. Roundhead No. 2 (nitens × Earl of Tankerville). Many of the hybrids from the latter parent are inclined to be short on the stem, but Roundhead No. 2, thus distinguished from an earlier hybrid of the same parentage, has a bold upstanding scape bearing a flower of noble proportions, nitens-like, but exceeding the best forms of that hybrid in size and intensity of colour. Dorsal sepal round, green centrally, with deeper brown spots, the whole broadly margined with purest white, petals and pouch richly varnished, as in villosum.

SERRASTYLIS MODESTA.—This is a very interesting species, which flowered in the collection of the late Sir Trevor Lawrence Bart., Burford, Dorking. It was obtained from Mr. J. O'Brien, of Harrow-on-the-Hill, who received it from Mr. F. C. Lehmann, from the Andes of New Granada. It is somewhat anomalous in structure, as it bears some resemblance to Trichopilia, Ornithocephalus, and Brassia, though perhaps most allied to the latter. It bears drooping racemes, with reddish brown sepals and petals margined with pale yellow and a whitish yellow lip.

ORCHIDS AT TUNBRIDGE WELLS.

BY H. A. FARMER.

IT has been my pleasure to spend a few hours at Messrs. Armstrong & Brown's establishment at Tunbridge Wells, where there is always something to interest the lover of these fascinating aristocrats of the Orchid family, especially the seedlings bearing their first flowers. Although I was informed that some hundreds of blooms had been cut and sent away, some probably to cheer up the weary invalid, some to adorn the tables and apartments of more fortunate folk, my expectations were more than realised, sufficient evidence remaining to give an idea of the wealth of bloom existing in the early part of the year.

A rapid glance showed the marked increase in the various genera specialized in. One outstanding feature which impressed me much was the extraordinary quantity of Odontoglossums and Odontiodas in full spike, in all their varied forms and colouring, and when one realizes the number of plants in flower, one doubts the calendar—Is it mid-winter or the spring? I well remember some years back, we obtained most of the Odontoglossums during the spring months, but with the advent of the Odontiodas, a contiuous display is assured. This bridging over is, to say the least, a wonderful achievement, and all our thanks are due to the hybridists for their success.

Entering the large Odontoglossum house, one is confronted with a glorious display of hybrids, carrying long spikes of bloom. A distinct form of Oda. Bradshawiæ had a deep cerise edge to the sepals and petals. Other Odontiodas varied in shades of orange, to the very deep-coloured forms of Oda. Charlesworthii. Another beauty is Oda. Cupid, dainty rose-pink. Very showy too is Oda. Devossiana with long graceful spikes bearing many bright starry flowers. Various Odontoglossum crispums with spotless sepals and petals stands out in relief to the rich colouring of the above, others varying in spots and blotches right away down, or up, if you like, until the white is obliterated.

Odontocidium Edwardatum is developing a huge spike, now six feet long, and still extending. Of course, the parents are jointly responsible for the length of this spike, but when trained carefully it makes a pretty and distinct feature. There are many other interesting plants, but names are impossible, otherwise these remarks would merge into a catalogue. What there is in store for the future one can conjure up by passing through the seedling houses. One special point noted was the increase in breadth, depth, substance and colouring of each successive generation bearing its first flower.

The scene on entering the large Cattleya house is most enchanting. A

spacious bank of Cattleya Mossiæ Raphæl alba contained numerous specimens bearing three and four flowers on a spike, and, remarkable as it may appear, some dozen plants had as many as five flowers on a single spike. A year or so back two was the usual number, but with good cultivation we have an example of what this favourite hybrid is capable of producing. A fitting companion is Lc. Schroderæ, the purity of the petals intensifying the brilliant purple lip. Very chaste too are several examples of Bc. Cliftonii albens. Mention must be made of Lc. Geo. Woodhams × C. Adula, with intense purple petals and deep crimson lip, a very striking flower. Lc. Colmaniana × C. aurea, with pure white petals and a purple blotch at the apex of each, is a very showy thing. In another house similar conditions prevail, flowers and sheaths, the hidden buds to be revealed in due time.

A large number of Sophronitis crosses are in excellent health. Sc. Atalanta is represented by a very dark variety. Lc. Sunray, with rich chrome-yellow petals is attractive, as also are some very robust plants of the Dove Orchid—Peristeria elata. Other Cattleya houses contain hundreds of seedlings in all stages, some showing their first sheath. What a fascinating prospect is here; one wonders what will ensue.

Along nearly the whole length of the corridor are suspended many varieties of Dendrobiums, where they have been resting for a considerable time, and are slowly but surely awakening from their slumbers, and getting ready to make their floral display. They all look very promising, and will in due course make a fine sight. By the way, if I err not, there should be a surprise in store, say in two years' time, in a seedling Dendrobium, the parents of which I am not allowed to divulge at present, but judging from past experiences of these hybrids this new production will not fail to give a good account of itself.

PODOCHILUS LONGICALCARATUS, Rolfe.—A native of Borneo and the Philippines, which was introduced to cultivation by Messrs. Linden, L'Horticulture Internationale, Brussels. It is allied to P. unciferus, Hook, f., and has been confused with it, but has a far longer chin. The flowers are semi-pellucid white, the segments being more or less tipped with rosy purple.

ORNITHOCEPHALUS MULTIFLORUS.—A Brazilian species imported by M. Binot, which flowered at Kew in June, 1898. It is noted as a very graceful and floriferous species, having the flowers white, with the exception of the incurved apex of the crest, which is bright green. In habit it is remarkably distinct, differing from all others except O. grandiflorus, Lindl., in having flat, not uniform leaves.

ROYAL HORTICULTURAL SOCIETY.

January 17th, 1922.

MEMBERS of the Committee present:—Sir Jeremiah Colman, Bart (in the chair), Messrs. Jas. O'Brien (hon. sec.) H. T. Pitt, C. J. Lucas, F. K. Sanders, Pantia Ralli, F. J. Hanbury, A. J. Kaye, A. McBean, R. Brooman-White, S. W. Flory, Gurney Wilson, J. E. Shill, and A. Dye.

AWARDS OF MERIT.

Baassocattleya Rutherfordii The Dell var. (Bc. Digbyano-Mossiæ × C. Gaskelliana), from Baron Bruno Schröder. An excellent example of an albino hybrid of B. Digbyana, the large flower having thick segments of cream-white tint, and an expansive labellum.

Lycaste Lucianii (lasioglossa × Skinneri), from W. R. Fasey, Esq. A fine specimen carrying 10 flowers and 5 buds. The sepals rose-coloured, the petals white, and the lip freckled with rose.

Cypripedium Nellie Pitt (Pyramus × Idina), from H. T. Pitt, Esq. A bold hybrid in which the broad dorsal has the upper area white, and with bright purple spotting over the median part. The wide petals dull yellow tinged with brown.

Odontioda Thalia, from Messrs. Charlesworth & Co. A pleasing result in which the flowers are almost entirely suffused with rose-crimson colour.

CULTURAL COMMENDATION.

Vanda Watsonii, from Messrs. Sanders. An excellent example of this showy Vanda, the four spikes carrying numerous pure-white flowers.

PRELIMINARY COMMENDATION.

Odontoglossum crispum Viceroy, from Messrs. Charlesworth & Co. A remarkably fine white form derived from the crossing of two fine varieties.

GROUPS.

Messrs. Stuart Low & Co. were awarded a Silver Flora Medal for an interesting exhibit containing good examples of Lælia anceps, Vanda Amesiana, some fine forms of Phalænopsis amabilis, Cattleya Percivaliana, C. Maggie Raphæl alba, the richly coloured Odontoglossum cordatum Low's var., O. Uro Skinneri album and Oncidium pulvinatum, with a branched spike of numerous blooms.

Messrs. Sanders obtained a Silver Flora Medal for a group in which were the stately Angræcum superbum, with a spike of six blooms, Vanda Watsonii, well-flowered, the pretty Cœlia bella, Epidendrum luteo-album, Cymbidium Warbler and C. Seamen, both fine varieties, as well as numerous Cypripediums and a fine Odontioda Jupiter.

Messrs. Flory & Black received a Silver Banksian Medal for an exhibit containing the new Sophrocattleya Phyllis (C. Tityus × S. grandiflora), Lc. Merlin, a promising hybrid, Bc. Lotus, showing the influence of C. Rex,

and Cattleya Princess Ileana, a pleasing white hybrid between C. Luedde-manniana alba and C. Mrs. M. Peeters.

The Hon. N. Chas. Rothschild, Tring Park, exhibited cut spikes of Phalænopsis intermedia, obtained from an imported plant which has been cultivated for over thirty years.

R. Gerrish, Esq., Manor House, Milford, Salisbury, staged Odonto-glossum Gorizia, with a spike of six elegant flowers.

W. R. Fasey, Esq., Holly Bush Hill, Snaresbrook, exhibited Lycaste Skinneri alba, bearing two finely developed flowers.

Pantia Ralli, Esq., Ashstead Park, Surrey, staged Odontoglossum Violleta (Armstrongiæ × Doris), a round flower, with reddish-brown blotching.

Mrs. Farrer showed Cypripedium Virginia (aureum × Fairrieanum), with three pretty flowers.

CYPRIPEDIUM KETHAR.—A flower of this very fine Cypripedium comes from the joint collection of T. and H. Worsley, Esqrs.. Haslingden. The plant was purchased intact from the executors of the late Mr. W. R. Lee, Plumton Hall, Heywood, before his collection was sold. It is the result of crossing C. Nirvana (Alcibiades × aureum virginale) with C. Grovesianum var. Richd. Ashworth (Lathamianum × Leeanum). The well-set dorsal sepal is orbicular in shape, 3¼in. wide, and porcelain-white, with the exception of a small greenish yellow area at the base, and a thin vertical line of purple dots in tbe centre. The horizontally arranged and crisped petals are of honey-yellow colour, with a medium line of brown-purple, and slight spotting on the inner portion. The large labellum is browish-yellow, the exterior glossy, the interior streaked and dotted with purple, As the plant is at present small, there is every possibility of some truly remarkable flowers being seen in the next or following season.

EPIDENDRUM IMSCHOOTIANUM.—A tall plant, bearing erect stems about three feet high, very short coriaceous leaves, and a terminal raceme of about six to fourteen flowers. The apex of the inflorescence arches over, but the flowers themselves remain erect. The sepals are oblong, nine to ten lines long, spreading, and light green, tinged with dull purple, especially at the back. The petals are narrower and light green, and the lip three-lobed with oblong subobtuse lodes, and white tinged with green at the margin It belongs to Lindley's section Amphiglottium, having numerous imbri-cating bracts below the inflorescence, and to the division Schistoglossa Integra, the lip being three-lobed, with entire lobes. It was introduced by Messrs. Sanders, and flowered at Kew in 1893, and at Glasnevin in 1898. Its habitat is not on record.

MANCHESTER ORCHID SOCIETY.

January 5th, 1922.

MEMBERS of the Committee present: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, B. J. Beckton, J. Birchenall, A. Burns, D. A. Cowan, J. C. Cowan, J. Cypher, A. G. Ellwood, A. Hanmer, Dr. R. N. Hartley, J. Howes, A. Keeling, D. McLeod, F. K. Sander, E. W. Thompson, and H. Arthur (secretary).

A Gold Medal was awarded to S. Gratrix, Esq., for a group of Cypripediums in great variety; Silver Medals to Mrs. Bruce and Miss Wrigley, Rev. J. Crombleholme, and Messrs. Cypher & Sons.

FIRST-CLASS CERTIFICATES.

Cypripedium mirum Gratrixiæ, immense flower, large dorsal sepal suffused with rose and spotted with dark red; Cyp. Cyclops Westonbirt var., large and perfect shape; from Mrs. Gratrix.

Cypripedium bourtonense, large dorsal sepal green with brown spotting and having a broad white margin; Cyp. Hestra var. Empress of India, dorsal sepal heavily spotted with deep purple; from S. Gratrix, Esq.

Cypripediums Merlene, large flower of perfect shape, dorsal sepal white with small green area at base; Lc. Elysian var. Solaris, sepals deep orange, petals orange-crimson; from P. Smith, Esq.

Odontonia Charlesworthii Bedford's var., one of the finest forms yet seen of this hybrid; a Silver Medal was also awarded; from Dr. F. Bedford.

AWARDS OF MERIT.

Cypripedium Dulciora splendens, and Cyp. Lord Wolmer var. Arenea; from Rev. J. Crombleholme.

Cypripedium Conquest compactum, and Od. crispum Noel; from S. Gratrix, Esq.

Cypripedium Sanactæus giganteum, Cyp. Æsmanii; from P. Smith, Esq.

Cypripedium Alma var. Hildegarde; from Mrs. Gratrix.

Cypripedium Argo var. March Along; from B. J. Beckton, Esq.

Odontoglossum leightmense; from Dr. R. N. Hartley.

AWARDS OF APPRECIATION.

Cypripedium Christopherson; from S. Gratrix, Esq.

Cypripedium Tennee; from the Hon. Robt. James.

BOTANICAL CERTIFICATE—FIRST-CLASS.

Spiranthes autumalis alba; from Dr. R. N. Hartley.

CULTURAL CERTIFICATE.

Mr. E. W. Thompson, for Odontoglossum scintillans Walton Grange var.

Miss A. A. Bolton, Warrington, staged Cypripedium Niobe-Leeanum var. Tom Clare, but the flower being undeveloped, the committee expressed a desire to see it again.

January 19*th*, 1922.

Members of the Committee present:—Messrs. J. Cypher (in the chair), B. J. Beckton, Dr. F. Bedford, J. Birchenall, D. A. Cowan, J. C. Cowan, J. Evans, J. Howes, A. Keeling, D. McLeod, J. McNab, E. W. Thompson, and H. Arthur (secretary).

S. Gratrix, Esq. (gr. Mr. J. Howes), staged a group of choice Cypripediums to which a Large Silver Medal was awarded.

A. T. Cussons, Esq., Kersal (gr. Mr. F. Cookson), was awarded a silver-gilt Medal for a group containing several fine Cypripediums and Cymbidiums, also well-grown Calanthes.

Mrs. Gratrix, West Point, staged Cypripedium Lord Wolmer Westonbirt var., and Cyp. Perseus.

D. Losh-Thorpe, Esq., Etterby Scaur, Carlisle, staged some excellent Cattleyas.

Miss Bolton, Penketh, Warrington (gr. Mr. Clare), exhibited Cypripedium Niobe-Leeanum var. Tom Clare, the flower being fully developed.

T. Worsley, Esq., Haslingden (gr. Mr. J. Sandwell), staged Cypripedium Alliance.

Messrs. Cypher & Sons, Cheltenham, were awarded a Silver Medal for a group of Cypripediums in variety.

Messrs. Keeling & Sons, Bradford, exhibited various Cypripediums and Odontoglossums.

Mr. D. McLeod, Chorlton-cum-Hardy, staged several good Cypripediums.

FIRST-CLASS CERTIFICATES.

Odontoglossum crispum XL All, very large white flower of perfect shape, small reddish spots on lip; from S. Gratrix, Esq.

Cypripedium Viking, dorsal sepal white, with brownish-green base, and broad claret line down the centre, petals greenish-yellow with brown lines; from S. Gratrix, Esq.

Cattleya Enid Colossus, exceptionally large flower of fine shape, lip round and dark; from D. Losh-Thorpe, Esq.

AWARDS OF MERIT.

Cypripedium Merlene var. Golden Noble (Selene × Lord Wolmer); from Mrs. Gratrix.

Cypripedium Lord Wolmer Westonbirt variety; from Mrs. Gratrix.

Cypripedium Niobe-Leeanum var. Tom Clare; from Miss Bolton.

Cypripedium Perseus Regina (Alcibiades × Lady Dillon); from S. Gratrix, Esq.

Læliocattleya Schroderæ var. Prince Henry; from D. Losh-Thorpe Esq.

CULTURAL CERTIFICATE.

Mr. F. Cookson, for Calanthes in variety.

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NOTES.

ELLEANTHUS CAPITATUS.—The genus Elleanthus, which comprises about 45 species, natives of tropical America, from the West Indies and Central America to Brazil and Peru, is so rarely represented in European gardens that the flowering of E. capitatus in the collection of Col. Stephenson R. Clarke, C.B., Borde Hill, Cuckfield, Sussex, is worthy of note. The plant consists of numerous erect stems bearing papery leaves, producing dense heads of numerous rosy-purple flowers. Last season no less than twenty of these spikes were produced, and as each one now carries four or five seed-pods it is apparent that self-fertilisation occurs. Under its original name of Bletia capitata, Robert Brown in 1813 mentioned this species as being cultivated in Kew Gardens. In 1835 it bore the name Evelyna capitata, and in 1861 it was removed to its present position in the genus Elleanthus. Colonel Clarke received his plant direct from the West Indies. In Jamaica E. capitatus grows to a height of four feet and over, the flowering season being July and August.

LYCASTE LUCIANII.—In 1891 a distinct Lycaste flowered in the collection of M. A. Van Imschoot, of Ghent, among some plants of L. Skinneri, imported from Guatemala. It was then divided into two, and failed to flower the following year, but on December 10th, 1893, a plant was exhibited by M. Van Imschoot at the meeting of the Orchidéene, at Brussels, under the name of L. Lucianiana, and received a First-class Diploma of Honour. Two days later it was exhibited by Messrs. Linden at the Royal Horticultural Society and obtained a Botanical Certificate, on this occasion as L. Lucianii. It was subsequently described (*Journ. des Orch.*, iv., p. 361) as a beautiful "species," near L. lasioglossa and L. Skinneri, and afterwards figured (*Lindenia*, t. 412), when, though still called a "species," it is remarked that M. Van Imschoot thinks it may be a natural hybrid between L. lasioglossa and L. Skinneri. It is evidently a natural hybrid, and a very decorative one, too, judging by the specimen

plant with fifteen flowers and buds that was exhibited by Mr. W. R. Fasey, at the Royal Horticultural Society, Jan. 17th, 1922, when it received an Award of Merit.

LÆLIA ANCEPS DAWSONI.—The January issue of the *Orchid Review* contains an article on Lælia anceps and its varieties. With regard to L. anceps Dawsoni I should like to record the fact that this notable variety was found by Mr. John Tucker, when collecting Orchids for Messrs. Low & Co. It was in October, 1865, that he discovered the plants near Juquila, in Mexico, at a high elevation, about 150 miles from Oajaca, growing on a rock two or three feet from the ground, by the side of a running stream fully exposed to the sun. Although the locality is sheltered on all sides by mountains, it is, however, remarkable for its extremes of temperature, being very warm during the day and very cold at night. Not more than sixty plants were discovered. I knew Tucker well before he went out collecting, and when the above plants arrived in this country I well remember one of the first being sold to Thomas Dawson, Esq., of Meadow Bank, Glasgow, where it flowered in the early part of 1868. Later on in the same year the first plant of Odontoglossum Andersonianum was seen in flower, having appeared in an importation received by Messrs. Low & Co. It was named after Mr. James Anderson, then gardener to Mr. T. Dawson.—HARRY A. BARNARD.

ANOMALOUS CYPRIPEDIUMS.—Intensive cultivation often gives rise to an abnormal inflorescence, which not unfrequently shows an increase in the number of the flowers as well as in their size. More rarely, the composition of the flower itself becomes altered by the addition of extra segments. Among a number of flowers of Cypripedium insigne Harefield Hall which Mr. R. F. Felton, of Hanover Square, London, had obtained for decorative purposes, were two that immediately attracted his attention. One of these spikes carried two flowers, and attached near the back of the upper one was a green leaf seven inches in length, and at the lower one another leaf three inches in length. Phyllody of the bracts had occurred. The green leaves that had thus taken the place of the usual bracts were regarded by Mr. Felton as having a distinctly artistic appearance, and it is his opinion that if this condition could be made permanent, a greater decorative value would be imparted to Cypripediums. Among the other flowers there were two examples of polyphylly of the corolla, each flower having two fully developed dorsal sepals, giving them the appearance of immense pansies, and constituting the possible making of a new section of the genus. Like the first mentioned abnormality, these flowers were also the giant variety of C. insigne, known as Harefield Hall.

CŒLOGYNE MOOREANA.

THE annexed figure represents the elegant Cœlogyne Mooreana, a native of Annam, where it was discovered by Micholitz, when collecting for Messrs. Sanders, on the Laos side of the Lang Bian Range, at about 4,300 feet elevation. It is a close ally of the well-known C. cristata, but differs in having larger leaves, a taller scape, deciduous bracts, and smaller flowers.

CŒLOGYNE MOOREANA.

The leaves range from nine to sixteen inches long, and the scapes from eight to twelve inches. The flowers are pure white, with a deep yellow blotch on the lip and yellow hair-like appendages on the disc. It flowered with Messrs. Sanders in December, 1906, and received a First-class Certificate at the Royal Horticultural Society, Dec. 11th, 1906. This species was named in honour of Sir Fred. W. Moore, of the Royal Botanic Garden, Glasnevin, and our illustration shows it flowering in the collection of

Lieut.-Col. Sir Geo. Holford, K.C.V.O. Last summer it was seen in perfection in the garden of Col. Stephenson R. Clarke, Borde Hill, Cuckfield, Sussex, and in a recent letter from Mr. Bengt M. Schalin, Helsingfors, Finland, we learn that it also grows very well in his collection.

BRIDAL BOUQUETS.—Mr. R. F. Felton, in a recent issue of *The Queen*, says there is no more certain way of ruining the effect of a perfect scheme in bridal or bridesmaids' gowns than the careless selection of the colour and design of the bouquets which are to be carried. It must be borne steadfastly in mind that the bouquet is a very important feature in the *tout ensemble* of either a bride or a bridesmaid. A bouquet should be so made that when it is properly carried it becomes a part of the general picture, and not a thing just carried as an added adornment. The bridesmaids' dresses also offer the florist an infinite number of suggestions, but in the colour blendings they call for the most careful consideration. A bouquet of pure white Odontoglossum crispum makes the lightest and most graceful of all bridal adornments.

TWIN FLOWERS ON LYCASTE SKINNERI.—In Mr. Harold Wigan's collection at Belmont Park, Bedhampton, a plant of Lycaste Skinneri has recently produced twin flowers, which is worthy of note, for this species is rarely seen with more than one flower on the same spike. In 1916, Mr. James Watson, Stanecastle, Irvine, had a similar example, which was the only one he had noticed during the long period of 25 years. Lycaste Skinneri was formerly grown in large quantities in Mr. F. D. Godman's collection, South Lodge, Horsham, where about 500 flowers were to be seen each season, but during five years not a single case of twins was noticed in a total of 2,500 flowers. Strange to say, Mr. E. Rogers had many examples, for, writing in 1916 from Bridge Hall Gardens, Bury, he remarked, "Twin flowers we have had almost every year since we began to grow Lycaste Skinneri, and I certainly think that vigour has a great deal to do with their production. As our plants have yielded a very large number of flowers in past years they are somewhat weakened, and this is probably the reason why we have no examples of twins this season; we have removed many of the spikes in order to assist recuperation. When twins appear I think the effect is spoiled, as one flower seems to be in the way of the other." Mr. James Cypher recollects a well cultivated plant of L. Skinneri that carried no less than sixteen flowers on one bulb, including two examples of twin-flowered scapes. Twin flowers come under the technical heading of lateral floral prolification of the inflorescence.

CYPRIPEDIUMS—THE BELLATULUM-NIVEUM GROUP

BY HAROLD RAVEN.

PROBABLY no section of this great genus has been used with more effect in modern hybridisation than the "bellatulum-niveum group," so that a brief note on the various species that compose the group, together with their hybrids and culture, will perhaps not be out of place. The group which is at once one of the most distinct and interesting in the genus includes, in addition to the two named in the title, the species concolor and Godefroyæ, making four in all. Of these we find that C. concolor was the first to be introduced into cultivation, for it was discovered by the Rev. C. Parish, at Pya Thonzoo near Moulmein in 1859, and introduced by Messrs. Low, some five years later. In habit C. concolor is dwarf, the foliage mottled lighter green above and red-purple beneath; the scape bearing one or two flowers of light yellow, thickly speckled with minute spots of red.

In 1868, C. niveum was discovered in the Tambelan Islands and first appeared in a batch of C. concolor imported by Messrs. Veitch. It was awarded a First Class Certificate when exhibited before the R.H.S. on the 19th of April, 1871. Closely resembling C. concolor in habit, the flowers of C. niveum are of a pure satiny white, minutely dotted with purple at the base of the upper sepal and petals.

C. bellatum which is found in the Shan States, Upper Burma, and Siam, was introduced by Messrs. Low, in 1888, while Godefroyæ, a native of Siam, which was originally discovered by Murton near the Bird's-nest Champon Islands, did not appear until some years later; its variety leucochilum, a very fine form, appearing in the collection of the well-known Orchidist Mr. R. S. Measures, of Camberwell, in 1894. C. bellatulum, another dwarf species, has finely tessellated foliage and bears beautiful shell-shaped flowers of creamy white, nearly uniformly spotted with purple-maroon; the variety album is a fine pure white form in which the flowers are entirely free from spotting. C. Godefroyæ is very similar in habit to bellatum, and has light yellow flowers which are blotched and spotted with purple; the variety leucochilum is distinct in that the lip is unspotted.

Having so small an area of distribution it is obvious that the various species of the group require much the same cultural conditions. In the past, what of unnatural conditions and lack of knowledge, they were deemed difficult subjects to grow, and acquired the reputation of speedily dying out in most collections unless frequently replaced by fresh importations. This indeed is not to be wondered at when one considers the unsuitable treatment meted out to them, and the very meagre knowledge which growers possessed of their requirements. Given reasonable treatment they are not difficult to please, and there is no reason why they should not thrive

and flower as vigorously and freely as any other member of the genus. The most suitable compost for them will be found to consist of two parts turfy loam, one part peat or fine Osmunda fibre, to which has been added a small quantity of pieces of mortar rubble, limestone or chalk; potted in fairly deep, well-drained pans, they should be given a position close to the roof-glass at the cool end of the East Indian or warm end of the Cattleya or Intermediate house, and given abundant supplies of water the whole year round. Probably a great deal of the difficulty which some growers experience with these species is due to the stagnant, moisture-laden atmosphere of many houses not being conducive to that hard and vigorous growth without which free flowering is an impossiblity. Collectors state that the plants are invariably found growing in nature, upon almost bare limestone rocks, in which position the atmosphere would be a great deal dryer than that usually accorded them. One can readily see that the degree of moisture in the air would vary considerably from hour to hour; the atmosphere in the early morning would be heavily charged with moisture, while the plants would no doubt be covered with dew, but as the sun gathered power and rapid evaporation took place the air would become much more buoyant and quite possibly distinctly dry and hot, to be followed again by heavy dew as evening approached. This atmospherical dryness at mid-day to ensure a close imitation of nature is almost completely ignored by most amateurs, and quite a few professional growers, who labour under the delusion that a sticky, stagnantly humid atmosphere, is needed by all Orchids alike, whether they be found in nature upon bare rocks or in dense steamy tropical jungles. Were this practice of varying the atmosphere as suggested to be more frequently adopted, with many species as well as those under review, it would, I feel sure, be the means of avoiding a great deal of weak and sappy growth.

It would be impossible in the space of a brief article of this nature to give anything like a complete list of the hybrids of this distinct group; they have been freely used as parents and invariably with good results The most important hybrids are as follows:

Of bellatulum: Dora Crawshaw, Lawrebel, Rolfei, Chapmani, Gratrixiæ, Helen ii., Chas. Richman, and Gertrude Hollington.

Of C. concolor: Tessellatum, Annie Ayling, conco-bellatulum, conco-Lawre, Olivia, and Mrs. F. Wood.

Of Godefroyæ: Fletcherianum, Daisy Barclay, Roger Sander Hindeanum, and Dowlingianum.

Of niveum: Purity, Venus, Tautzianum, Antigone, Vipanii, and Telemachus.

Many more can easily be obtained from show reports and the catalogues of the various traders.

THE BORDE HILL COLLECTION, CUCKFIELD, SUSSEX.

THE extensive assemblage of plants cultivated in the beautiful garden of Colonel Stephenson R. Clarke, C.B., at Borde Hill, Cuckfield, Sussex, has long held a high reputation, and regarding the Orchids there are very few collections that better represent this highly important and beautiful family. Although many of the plants have been at Borde Hill for a long period, some of them possess an earlier history, for they were formerly cultivated in the Croydon collection of Colonel Clarke's father. A noteworthy example may be selected in Cattleya Trianæ Clarkeana, which was imported in 1876 by Messrs. Rollisson & Sons, of Tooting, and after being cultivated for many years at Croydon is now among others of its kind in the present collection.

With the advent of the New Year come the first buds of the popular species Cattleya Trianæ. Some of the finest varieties of this Colombian plant are cultivated, and a notable example of vigour may be seen in three fine specimens of C. Trianæ delicata, being respectively eight, eight and fourteen well-developed blooms. A flower of excellent shape is the variety Emperor, and two unusually pretty forms are to be seen in Isis and Perfection, which resemble one another very closely. C. Trianæ Harefield Hall is represented by several plants, and the well-known C. Trianæ Backhouseana stands along with the varieties Empress of India, Rajah, Britannia, Imperator, Mooreana, Grand Monarch, Reine des Belges, and the Premier. These names, so important in themselves, serve to distinguish the high-grade nature of the varieties to which they are attached. Other distinct forms exist in C. Trianæ Lady White, with pure-white sepals and petals, also in the Uplands variety, and in the form called concolor, this being of similar coloration throughout all the segments.

Albino Cattleyas comprise a wide selection, and in addition to white varieties of the principal species there are the albino hybrids known as Cattleya Cowaniæ alba and C. Dusseldorfei Undine. In strong contrast to Cattleya Skinneri alba is Temple's variety of this species, with flowers of rich rose-purple colour. There are many good varieties of Cattleya Schröderæ, as well as C. Mendelii, the latter including Princess, Colossus, and an unnamed one from the Westonbirt collection. In a warm portion of the house may be seen some hundreds of Cattleya and Læliocattleya hybrids, the largest have already reached the flowering stage, and some fine novelties have appeared.

The East Indian House is always of interest, for it contains many stately plants that are not seen in present-day collections as much as they deserve. On one side of the door is a tall plant of Vanda suavis, and on the other an equally fine example of V. tricolor, both clothed with healthy

pretty D. Finlayanum, a native of Moulmein, a large mass of D. Loddigessii, growing on a raft, and several varieties of D. nobile, including the richly coloured nobilius, the pure-white virginale, and Burfordense, the latter having blotches of colour on the two lower sepals.

Another section of the Dendrobium genus is represented by the tall growing D. Dalhousieanum, the musk-scented D. moschatum, and the Westonbirt variety of the Burmese D. fimbriatum, bearing pendulous racemes of rich orange-yellow flowers. The Dendrobium hybrids total several hundred plants, consequently mention can only be made of the following :—Ainsworthii, Chessingtonense, Thwaitesiæ, Juno, Lady Colman, Luna, Clio, the Gatton Park variety of Wiganianum, and melanodiscus pallens, from the late Mr. Chamberlain's collection at Birmingham. In another house, and suspended in pans from the roof, are fine plants of D. Parishii, the pretty D. Dearei, D. thrysiflorum, and D. Pierardii, as well as several examples of D. suavissimum, with racemes of sweetly-scented flowers of golden-yellow colour.

Pleiones are cultivated in over twenty pans. each well filled with several plants, among them are the North Indian P. humilis and P. maculata, as well as P. lagenaria from Khasia, but the best constitution is possessed by the more recently discovered P. yunnanensis. A plant rarely seen is the Mexican Arpophyllum giganteum, now producing a flower spike in this collection. Another rarity is the Brazilian Leptotes bicolor, sometimes referred to under the generic name Tetramica, and there are also more than half-a-dozen plants of Neobenthamia gracilis, with grass-like foliage.

During the past winter more than one house has been gay with numerous flowers of the best Cypripedium species and hybrids. Last Christmas there were many fine varieties of the popular C. insigne, including the giant form known as Harefield Hall, and the primrose-yellow one called Sanderæ. Others that have flowered well during the past season are C. Rothschildianum, with its long petals sustained in horizontal style, the albino C. callosum Sanderæ, and selected varieties of C. Charlesworthii. Many beautiful varieties of C. Leeanum and C. Arthurianum, as well as the golden C. aureum, and the greenish C. Maudiæ may be mentioned as representative of this favourite genus. More than a dozen large plants of the white flowering Odontoglossum pulchellum are the picture of good health, and the flower spikes give promise of much bloom in the near future. A plant at one time much cultivated in collections as Epidendrum aurantiacum, and here represented as such, belongs in reality to the Cattleya genus. Two immense specimen plants of Cattleya Bowringiana rarely fail to attract the attention of visitors, while the botanist will admire fine plants of Vanilla planifolia, also of the leafless V. Humblotii, with green stems bearing blackish warts, giving it the appearance of

being spotted like a snake, and of V. Wightiana, now showing signs of flowering.

The span-roofed Odontoglossum house is the latest addition to the range of glass. It contains a varied assortment of selected crispums, both white and blotched varieties, many excellent hybrids, including several of Harryanum parentage, and numerous smaller plants as yet unflowered. Several vigorous examples of Ada aurantiaca, with sprays of orange-red flowers, and a representative selection of Odontiodas, as well as hybrids of Odontoglossum Edwardii, are also cultivated with much success. Suspended from the roof are numerous pans containing healthy plants of Odontoglossum Rossi majus and Sophronitis grandiflora. Although many Masdevallias have little more than a botanical interest, there is in this house a collection of the more showy species, including good forms of Harryana, the white tovarensis, the pretty Schröderæ, which succeeds admirably, Veitchii grandiflora, Houtteana, and more than one good variety of Chimæra with its curious flowers. In addition to some Masdevallia hybrids, there is a fine plant of Restrepia antennifera.

Passing through the above house into another of similar construction one comes across a wonderful batch of the South African Disa grandiflora. They are cultivated in a bed of fibre, leaf-mould and sphagnum moss, and if in its native home this beautiful Orchid has earned the name of The Pride of Table Mountain it certainly is entitled to be also called The Pride of Borde Hill, for never have finer or healthier plants been seen. There is also a fine batch of the elegant Disa Blackii (grandiflora × Luna), and four pans containing an excellent crop of newly-raised seedlings between grandiflora and Blackii.

At one time the Orchids were cultivated by the head gardener, Mr. S. R. Conn, but as the collection is ever on the increase they are now under the special care of Mr. H. J. Gillett, who commenced his duties at Borde Hill six years ago, having previously been twelve years with Messrs. Wm. Bull & Sons, at Chelsea. Mr. Gillett's long experience enables him to maintain this extensive and varied collection in excellent order, and doubtless he will soon bring to perfection many of the seedling Orchids that have already been raised.

DICHÆA CILIOLATA.—This Costa Rican species was sent to Kew by Mr. C. H. Lankester, and flowered in the collection in July, 1915. It is allied to D. hystricina, Rchb. f., but has much broader and shorter leaves. The flowers are pale buff, with red-purple spots and bars, the lip white with purple spots and a purple suffusion on the side lobes, and the column pale buff, margined with dull purple, and the rostellum violet.—R. A. ROLFE, *Kew Bulletin*, 1917, *p.* 86.

CHARLESWORTH'S CATALOGUE.

THE 1922 edition of Messrs. Charlesworth & Co.'s catalogue extends to 2,245 items, and includes a most extensive enumeration of rare species and varieties, as well as an immense number of choice hybrids. A new type of Odontoglossum crispum is illustrated by a coloured plate. About ten years ago, two selected varieties of the old plain Pacho type were crossed, and produced seedlings of a greatly improved strain. From these the best was selected and crossed with another grand variety of the imported class, the result being a type of crispum so far superior to anything possible to import that it might almost be called a new species; it is now known as Charlesworth's Premier Type.

Considerable attention has been given to Odontonia hybrids, which are progenitors of a distinctly new series of Orchids, and a bridge between the warm growing Miltonias and the cool Odontoglossums and Odontiodas, by which it is hoped eventually to evolve what may be called a warm growing type of Odontoglossum that will appeal to amateurs in hot climates who are at present unable to grow the beautiful spray Odontoglossums. One of the finest of these hybrids, Odontonia Pittiæ (Miltonia Bleuana × Odontoglossum Harryanum) is represented by an excellent coloured plate. Another interesting hybrid is Charlesworthara nobilis (Oncidium macranthum × Miltonioda Ajax), thus combining the three genera Oncidium, Miltonia, and Cochlioda. A coloured plate of this shows a flower of reddish-brown colour, with golden-yellow tips to the segments.

The trigeneric hybrids combining Miltonia, Cochlioda, and Odontoglossum, and known under the title Vuylstekeara, in many respects favour the new section of Odontonias, but having the addition of Cochlioda blood are mostly improved in colour. A coloured plate of Vuylstekeara memoria Joseph Charlesworth conveys some idea of the wonderful colouring which may result from further judicious crossing of these gems. In form it approaches the Miltonia parent, the colour being deep maroon crimson on the sepals and petals, and rosy crimson on the expansive labellum. The yellow crest at the base of the lip forms an attractive contrast.

The catalogues issued by Messrs. Charlesworth always form a trustworthy record of the periodical advances made in the hybridisation of Orchids, and it only remains to be said that the present edition is remarkably correct in nomenclature and typographical details.

SIGMATOSTALIX PERUVIANA.—This species first flowered with Messrs. Sanders at St. Albans in November, 1910. It has straw-coloured sepals and petals, with a dark band at the base of the dorsal sepal and petals, the lip light yellow with a shining orange-yellow crest.

PHALÆNOPSIS SCHILLERIANO-STUARTIANA.

THIS interesting Phalænopsis is believed to be a natural hybrid between P. Schilleriana and P. Stuartiana. Some doubt has been expressed regarding its origin, for the two species were not previously known to grow together, the former being chiefly from Central Luzon and the latter from North-east Mindanao. The leaves of the plant are dark green with broad,

PHALÆNOPSIS SCHILLERIANO-STUARTIANA.

irregular bands, and the flowers white, effectively flushed with pale rose pink towards the base of the segments, the lip and inner halves of the lateral sepals being spotted with brown. Our illustration, from a photograph by Mr. G. I'Anson, shows the plant exhibited by Messrs. Hugh Low and Co. at the Royal Horticultural Society, January 23rd, 1900, when a First-class Certificate was awarded. Like other members of the genus it enjoys much heat and moisture.

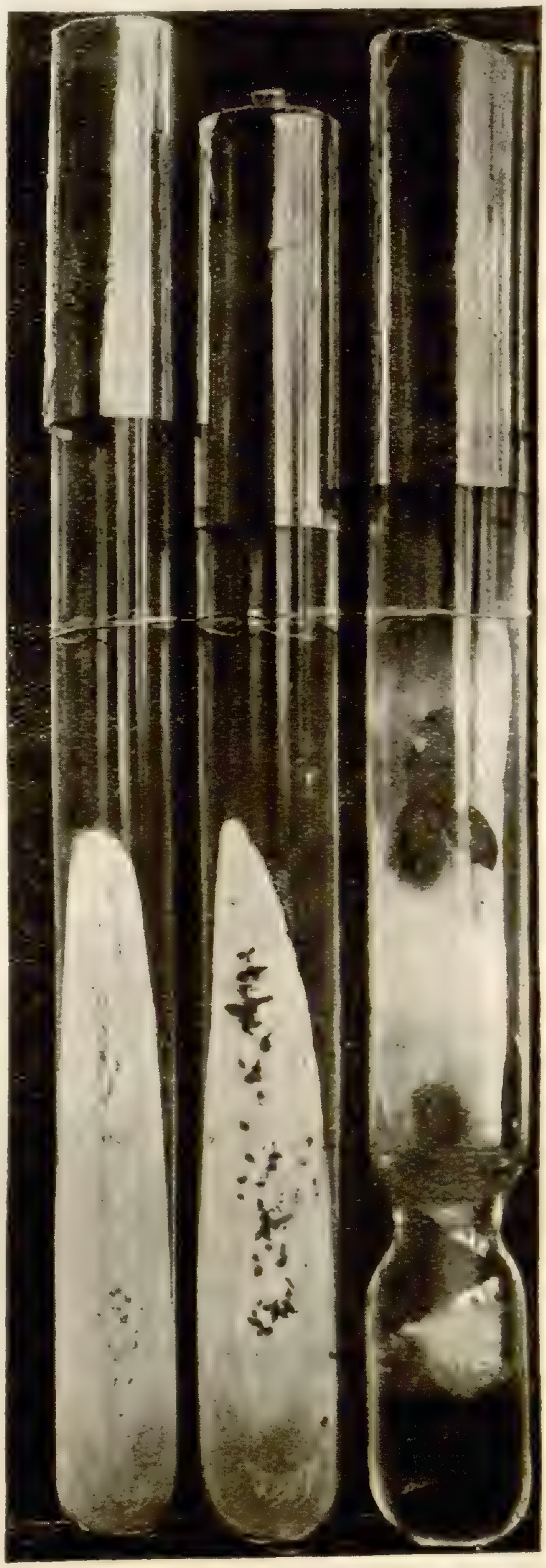
ORCHID MYCORRHIZA.

IT is hardly necessary to remind anyone of the numerous hybrids that have been produced by Messrs. Charlesworth & Co. Almost all the popular genera have at one time or another been taken in hand and intercrossed as far as natural limitations admit. But although a certain degree of success was obtained with Odontoglossums and the allied genera, the results did not satisfy the ambitions of the late Mr. Charlesworth, so he set out to study the fungus question, and to evolve new methods of culture. The present editor of this journal well remembers the commencement of this work, and the difficulties that then presented themselves induced him to recommend Mr. Charlesworth to seek the assistance of Mr. J. Ramsbottom, of the British Museum. A personal introduction took place at the Royal Horticultural Society's Holland House Show, and resulted in Mr. Ramsbottom paying a visit to Haywards Heath, in the year 1913. Of the many important and beautiful cool house orchids that have since been produced by Messrs. Charlesworth, five are the subjects of coloured plates in the 1922 edition of their catalogue, the forepart of which is devoted to an article on the theoretical questions concerning the relation of Fungi and Orchids by Capt. J. Ramsbottom, O.B.E., M.A., of the British Museum (Natural History), who collaborated with Mr. Charlesworth in his scientific researches.

In the introduction it is remarked that one of the most interesting phenomena in biology is that generally know as symbiosis—the living together of two organisms in close association. It is usually considered that this intimate relationship is of benefit to both components. Cells containing fungi were first figured in an Orchid, Goodyera procera, by Link in 1840. Reissek, in 1847, found that in Orchis Morio the fungus was present in almost all the cortical cells, whereas in the tropical species the fungal masses were arranged singly at the periphery. He also attempted to extract the fungus from the roots. The fungus usually enters the root through the root-hairs, and infection does not generally occur once for all, but the hyphæ from the soil infect the roots in several places. Not all the roots of an Orchid are generally infected. Aerial roots particularly are free from fungus. Large numbers of native and exotic species have been studied by Wahrlich, who examined over 500 of the latter cultivated in Moscow.

GERMINATION OF SEEDS.—It was not until 1804 that any Orchid seedlings were described, when Salisbury figured those of Orchis Morio. Dominy of Messrs. Veitch & Sons was amongst the earliest raisers of seed, and probably obtained his best results by sowing the seed on the compost containing the parent plant. Various methods have since been practised, but in general they all consist of sowing the seed on fungus-infected

material. Noel Bernard began his studies on mycorrhiza in 1899, and followed them up in brilliant style. He isolated the fungus from the Orchid root and cultivated it on nutrient media. Some notes on fungus co-operation in Orchid roots were contributed to this journal by the present Editor in May, 1906 (vol. xiv., p. 154), and induced Bernard to send the adjoining photograph, "showing the results of my experiments in this subject" (vol. xiv., p. 201).



BERNARD'S CULTURE TUBES.

The culture tubes represented are ordinary glass tubes, closed by a plug of cotton-wool, and covered above this by a cap of tinfoil, so as to render impossible the entrance of moulds or other micro-organisms. These tubes were sterilised by heat before making the cultures. The left-hand tube contains seeds of an Odontoglossum sown on the inclined surface of the nutritive jelly occupying the lower part of the tube. The seeds have simply turned green and swollen slightly, but have not otherwise developed. The second tube contains a similar jelly, but has been inoculated with fungus from the roots of an Odontoglossum. The fungus, which forms a delicate network on the surface, has infected the seeds, and germination is proceeding. The third tube shows a Phalænopsis seedling, resulting from a seed sown seven months previously on a piece of cotton wool, the lower part of which is immersed in the nutritive liquid. In the bulb part of this tube can be seen some of the fungus forming a whitish mass. In 1909 Bernard published an important book on his researches, and in the same year appeared a comprehensive work by Burgeff entitled. *Die Wurzelpilze der Orchideen.*

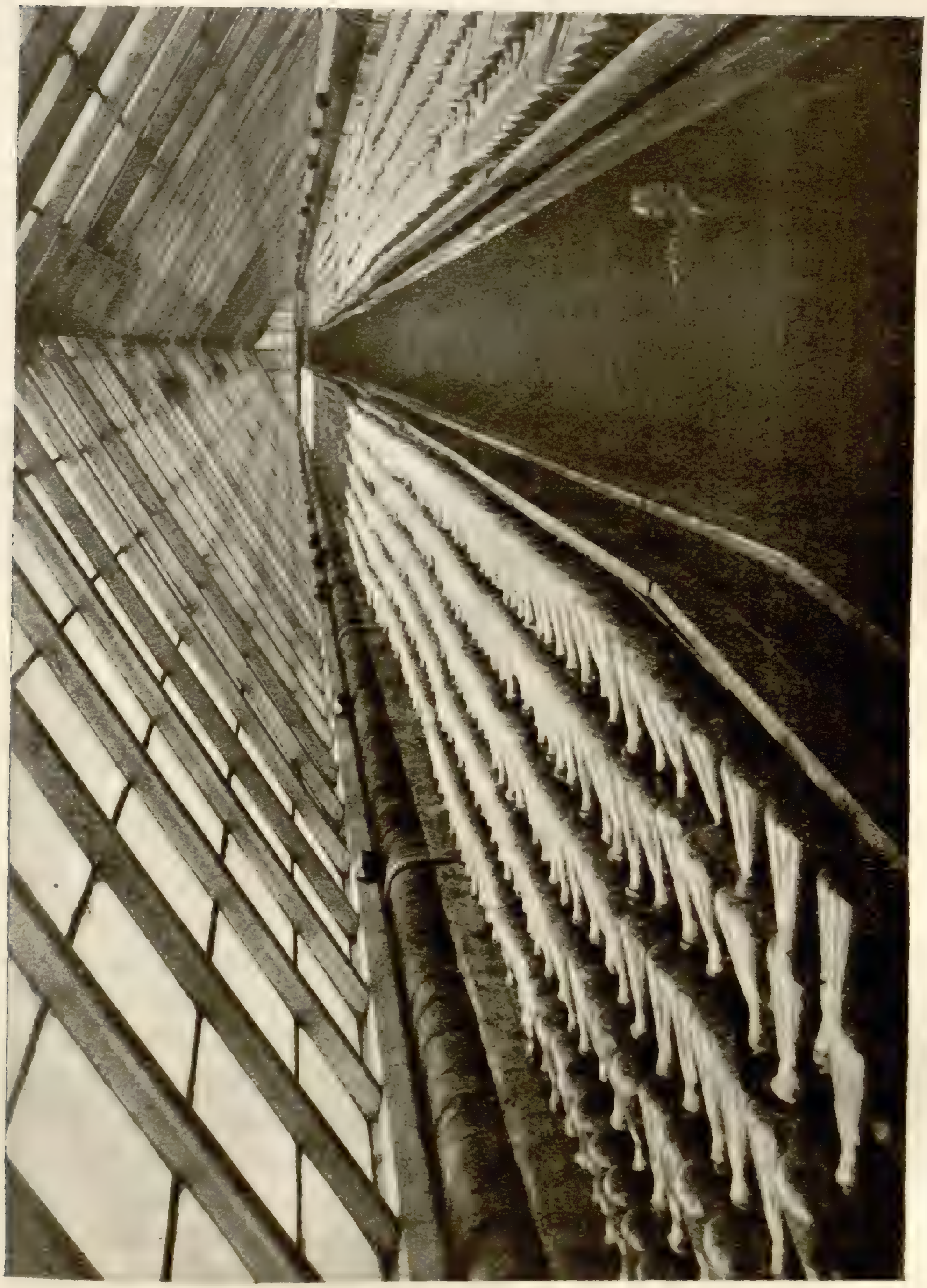
Returning to Capt. Ramsbottom's article, it is stated that Bernard in

his first attempts to isolate the fungus from Orchid roots obtained a species of Fusarium. When, however, he succeeded in extracting the right fungus he established a criterion which enables one to settle without doubt whether the true fungus has been isolated, viz., that the endophyte is able to bring about the germination of the seed. The fungus, when living within the cells of the plant, shows no characters which give a clue to its systematic position, but when it is grown on nutrient media it shows additional stages of development which are characteristic. Bernard, in his experiments, found that the fungi, if grown in culture, gradually became inactive. Cultures two years old were quite unable to bring about germination. Burgeff, on the other hand, found that his cultures after twenty-six and twenty-eight months retained their power.

The seeds of Orchids are very small, the embryo being generally only just visible to the naked eye. There is no differentiation into cotyledon, stem, radicle, as is almost universal in flowering plants. Seeds taken from the capsule under sterile conditions, and sown on ordinary compost where no fungus is present, rarely develop. As a rule they merely swell and turn green. The food reserve of Orchid seeds is most frequently oil, part of which becomes transformed into starch. The reserve food comes to an end just as the seed begins to turn green, and if no fungus infection occurs the seedling dies. In the culture flasks the fungus usually enters the seed within a few days. Entry takes place at the suspensor end of the seed. The suspensor is the stalk by which the seed is attached to the interior of the capsule, or seed-pod. The cells are invaded by degrees, the hyphæ becoming twisted into a ball in each cell before passing on to the next.

An interesting discovery is the fact that in no Orchid studied in the present series (Odontoglossum, Oncidium, Cattleya, Cymbidium, Vanda, Cypripedium, etc.), does the developing root when passing through the tissues enter the fungal zone, nor do the hyphæ extend into the root. When the first root of the young seedling enters the soil it is absolutely free from infection. Infection of the root takes place, not from the little seedling bulb, but from the soil or compost, and generally when the root is about a quarter of an inch in length, the hyphæ entering by the root hairs.

An interesting type of mycorrhiza occurs in Gastrodia elata, a non-chlorophyllous Orchid widely spread throughout Japan. Unless the mother tuber has been infected with the necessary fungus the off-sets decrease in size with each successive generation, until they become so much reduced and deficient in food materials that they are incapable of further multiplication. So far no results have been published as to the germination of the seeds of Gastrodia, and although it is expected that fungal infection is necessary for seedling development, the exact form of fungus is uncertain.



MESSRS. CHARLESWORTH'S SYSTEM OF RAISING SEEDLINGS BY THE PURE CULTURE METHOD.

The glass flasks are partially filled with a suitable compost, and after being sterilised by heat the necessary fungus is added. A few weeks later the seed is sown and germinates rapidly with considerable regularity.

BULBOPHYLLUM FLETCHERIANUM.—This remarkable species from New Guinea is again flowering in the collection of the Rev. J. C. B. Fletcher, Mundham Vicarage, Chichester. Its first appearance was at the meeting of the Royal Horticultural Society held May 5th, 1914, when an Award of Merit was granted. The spike then carried a cluster of seven flowers, but on the present occasion the number has increased to twenty-five, which are of a reddish-purple colour, speckled with white. The pendulous leaves remind one of those of Phalænopsis Schilleriana.

CULTURAL NOTES.

BY J. MACKAY, ORCHID GROWER TO JAMES J. JOICEY, ESQ., THE HILL, WITLEY, SURREY.

VANDA CŒRULEA.—Plants of this handsome and useful Orchid have had a comparatively dry rest for the last few weeks in a cool intermediate house. Towards mid-March they should be placed in their growing quarters, and any repotting required should by then have had attention. Use pots of adequate size to accommodate their roots; a suitable compost consists of equal parts chopped osmunda fibre and sphagnum moss. The plants should be made secure in their receptacles by the aid of plenty of broken crocks as drainage, filling the pots about two-thirds of their depth, then finish with the compost mentioned. Protect newly-potted plants from strong sunshine until they become established, spraying them occasionally to prevent the foliage losing its rigidity. Vanda cœrulea thrives best in a house well supplied with fresh air, and this month we place our plants in a vinery on a side stage. Here they get sufficient moisture, ventilation, and shade to suit their requirements until the end of July, when they are returned to the Cattleya house as the flower spikes begin to show.

Vanda teres, V. Margaret Maron, and V. Agnes Joaquim have been rested quietly in the warm house. With increased sunshine and atmospheric moisture they will soon commence growth again. These Vandas, to flower freely, should have a position exposed to all sunshine, and be syringed frequently during the day when in active growth. Vanda teres will very soon be showing flower spikes. When the flowers develop they should be protected from the sun by shading to prolong their beauty, and the surroundings kept drier to prevent the flowers becoming spotty.

Vanda Luzonica. This handsome and somewhat rare species is showing flower spikes, and in order to develop them satisfactorily, slightly increased supplies of moisture may be given. This plant should be grown in baskets and suspended in a rather shaded position in the warmest house, using a compost of equal parts osmunda and sphagnum moss. Like most Vandas, it has the peculiarity of throwing out long aerial roots, only more so, these reaching in length nearly four feet. The cause of failure to grow members of the Vanda family successfully can mostly be attributed to excess of moisture at the roots or in the atmosphere during the winter months, causing the foliage to become spotty, and often from drip, which may result in the total loss of the plant.

CALANTHES.—About the end of the month these useful decorative plants will be sufficiently advanced in growth to be repotted. The roots then push out quicker and are better able to take hold of the new compost while it is fresh and sweet. A good compost is necessary, and should consist of two-

thirds good fibrous loam, and the remainder leaf-soil, chopped sphagnum moss, coarse silver sand, and finely-crushed crocks, the whole being well mixed. The compost, when prepared, should be laid a few days previous to use in a suitable place to get warmed through. Before repotting, shake out the old soil, and shorten back the roots on the bulbs to about two inches; this portion will help to keep the plants firm until new roots obtain a hold of the fresh compost. I prefer to pot them singly in clean pots, about five or six inches in size for the strongest, and proportionately smaller ones for the others. Good drainage is necessary, the pots being rather more than a third filled with clean crocks, placing over these a layer of beech or oak leaves, which will prevent the drainage being choked, and will also assist in building up the plant later when the roots get down to them. In filling the pots, the soil should be shaken down moderately firm to about two inches from the top, then place the pseudo-bulb on the surface, adding more soil so that its base and the growth are just covered. This will leave about an inch of space, which will allow a little top-dressing of fibrous loam and dry cow-manure later on when the plants become established. After potting, place the plants in their growing quarters, which should be a light position near the glass in the warmest house. Very little water will be required until the new roots make their appearance through the soil, when throughout the growing season they should not suffer from want of water. The season of growth is not a long one, and if good spikes of flowers are desired the plants must be treated liberally, as on the size and firmness of the bulbs depend the quality of the bloom. When growth is completed in the autumn the leaves gradually ripen and fall off, but until the flower spikes appear the plants should have plenty of moisture. As the blooms expand, water should be gradually reduced until most of them are fully open, when the giving of water may cease.

THUNIAS may be attended to this month. The compost should be of a loose, open kind, osmunda fibre, fibrous loam, and sphagnum moss, with the addition of crushed crocks will be found suitable. Pot firmly, placing about four strong pseudo-bulbs in a 32-size pot. These make nice, graceful plants for decorative purposes; give water with care until the plants become well rooted, when copious supplies may be given. Whilst growing, they require plenty of heat and moisture, as well as sunshine. These conditions are conducive to short, stout pseudo-bulbs and free flowering.

DENDROBIUMS.—Many of the plants which have flowered earlier will by the end of the month be in a sufficiently advanced state of growth for repotting to be taken in hand. The best time is when roots are pushing from the base of the new growth. Some of the stronger growing varieties should be left over until root action is in evidence, for the chances of losing the young growth by rotting-off will then be considerably reduced. The

compost used is made up of equal parts chopped osmunda fibre and sphagnum moss, mixed with plenty of sand and finely broken crocks. Pots or pans will answer most purposes. First place in them a few crocks, then some of the rougher material over them, so that the plants to be potted may be easily accommodated. Potting should be done rather firmly, keeping the base of the new lead slightly below the rim of the pot. Sufficient water should be given to prevent the pseudo-bulbs from shrivelling, but no more, until root action is well extended, when the supply of water may be gradually increased until well into midsummer. After this date, if satisfactory growth is being made, the plants and surroundings should be well supplied with moisture.

SEEDLINGS.—Where the raising of seedling Dendrobiums, Cattleyas, and Læliocattleyas is carried on, there will be a good many plants in need of repotting, and these must now receive attention at once, and be put right for growing, so that they may enjoy the full advantage of a long season of activity. Keep them growing in comparatively small pots, but give them fresh material if possible. They are at all times best if kept well up to the light, but not too much exposed to the direct rays of the sun, or damage may be done to these small plants that will not be overcome.

The larger plants of Læliocattleyas and Cattleya hybrids which have produced flowers during the autumn and winter months, and are showing signs of renewed growth, will also require attention. Use suitable pots to accommodate them for at least a couple of years, with a compost of equal parts of osmunda and AT fibre. See that the plants are potted firmly and watered carefully until new roots begin to grow freely.

HABENARIAS.—These pretty, tuberous Orchids have been resting on a shelf near the glass in the warm house since flowering, and will soon push new growth from the apex of the tubers. They succeed better if potted annually, using pans of suitable size with a compost of good fibrous peat, loam, and sphagnum moss, in equal proportions, adding finely broken crocks and coarse silver sand. Mix these well together, and pot the tubers moderately firm. When repotted, water with a fine rose water-pot and place them on the shady side of a warm house, and as near the glass as convenient. Whilst in growth, a sharp watch must be kept for thrips, and the usual remedies applied, or the foliage will soon be disfigured and give the plants an unsightly appearance.

PLATYCLINIS.—These species form some of the most graceful of spring-flowering Orchids, and are to be commended on account of their easy culture. P. glumacea is probably the best known, but all the species delight in similar treatment, and will thrive in the warm or Cattleya house. They are best grown in well drained pans in a compost of finely chopped osmunda fibre and sphagnum moss, and should be potted as they begin to

grow. During active growth a plentiful supply of water should be given, but this should be reduced at other seasons.

GENERAL REMARKS.—March is usually a very fickle month, but during sunny weather an increase of temperature will be advantageous to the plants generally, providing there is not an excess of fire-heat at the same time. Sometimes the sun will make its appearance suddenly during the early part of the day, when the hot-water pipes are already sufficiently heated to maintain the proper degree of warmth, and it will then be better to shade rather than allow the temperature to become excessive, or to attempt to reduce the same by a superabundance of air. Ventilation by means of top lights is often accompanied by considerable risk during this and the following month, and if indulged in should be done most sparingly, otherwise the cold draughts resulting are the means of checking tender growth, and, again, the atmospheric moisture is too rapidly transformed. See that all shading is thoroughly overhauled and put ready for use by the end of the month.

ODONTOGLOSSUM SCINTILLANS.—At the meeting of the Manchester Orchid Society held on January 5th, an interesting plant of the Walton Grange variety of Odontoglossum scintillans was exhibited from the collection of Philip Smith, Esq., Haddon House, Ashton-on-Mersey. The leading bulb carried a spike of 16 flowers, with an additional flower on the apex of the same bulb, and a Cultural Certificate was awarded to Mr. E. W. Thompson, who had grown the plant to such a fine state of perfection. When one considers that this garden-raised hybrid is the result of crossing the Colombian O. Wilckeanum with the Mexican O. Rossii, the flower spike is truly remarkable, for O. Rossii rarely produces more than two or three flowers on a spike, and even O. Wilckeanum (crispum × luteopurpureum) would be considered well developed with a spike of a dozen flowers. In the photograph of this plant sent by Mr. Thompson, the characteristic spotting of O. Rossii is recorded, the sepals being evenly spotted over their whole area, while the petals are only spotted on the ceutral area of their inner half. This plant evidently possesses a good constitution, for the flowers had been open two months before the photograph was taken.

R.H.S. AWARDS.—When the recommendation of any award has been proposed and put to the vote of the Orchid Committee, it will not be considered to have been "carried" unless the number of votes cast in its favour shall be at least double the number recorded against it. When a Challenge Cup is won by an amateur, his gardener's services shall, in future, be rewarded by the bestowal of an appropriate medal.

AN AMATEUR'S EXPERIENCE.

By JOSEPHINE WALKER.

IT gave me great pleasure to see my fellow amateur's article in print. Mr. Harold Wigan's conditions appear to be the exact opposite of ours, and I shall be very interested indeed to hear how he fares, particularly with his Dendrobiums, because we fell badly in trying to grow them in the same house as the Lælias and Cypripediums, even with a south aspect. I should feel very much inclined, provided they are Indian, to try them in the cucumber house, when they start their growths, and let them have the heat and moisture to make fine bulbs.

I think the crocking of pots is, like many more Orchid theories, just interpreted according to the fancy of the particular person. As far as we are concerned, our practice with Lælias, Læliocattleyas, Cypripediums, and Cymbidiums is one good hollow crock over the hole in the bottom of the pot, and over that a layer of sphagnum moss. When we turn them out for repotting the roots are invariably nestled close around the bottom of the pot in a circle, in fact, some of the Cypripediums and Cymbidiums have their roots through the bottom and into the damp ashes on which they stand. We always ram a fairly thick wad of living sphagnum around the top, inside of the pot. The Cypripediums and Cymbidiums seem to love this moss.

We turned out two plants of Cymbidium Tracyanum; they were in 12in. pots, with bulbs the size of a big man's fist, and as the pots were good ones, we were loth to break them. The consequence was we left a good many of the roots clinging to the inside, but that will not matter. They really were a sight, you could not see soil in any place on the outside, it was simply a solid network of fleshy roots about the size of a lead pencil. We had a small port-wine cask sawn in two, the outside was painted, and a few holes were burnt in the bottom of each half. Into these we put the Cymbidiums, using the same sort of soil in which they had flourished, without any disturbance of the roots, and they look very happy. The compost is composed of three parts good fibrous loam, broken up to walnut size, and one part broken up peat and smallstuff that has been rejected from the potting of the Lælias, etc. We then top-dressed the surface with about two inches of living sphagnum moss. They seem to love this. If their quarters are cool, and the sun cannot get at them, you will see in the summer the roots growing through this to the surface, and often striking up with their tips in the air. All the Cymbidium family love us. I think because we keep them in cool quarters and do not let the sun get directly on them. Except when they are in spike, we deluge them with water, and always spray them overhead with the hose-pipe.

My husband and I were discussing the question of what is the real secret of success with Orchids as far as the average amateur is concerned, and we came to the conclusion that firstly one must have a real love for them, the same as a successful gardener has for his flowers, and the rest is study and attention. It is no use being kind and attentive to orchids this week and then giving them casual attention for the following weeks, the damage done by this is often irreparable. To go into an orchid house is almost fatal if you are in any sort of a hurry. One may only go to syringe a few plants, or cut off a decayed leaf, and invariably you find half a dozen things that want doing, and if you love your plants you attend to them THEN—that is the secret of success.

I have often known times at the week-end when, in company with my husband, we have started in the morning with the intention of just potting half-a-dozen plants, and we found ourselves still at it in the evening. Handling the plants has found a want here and a need there, and if it is your hobby and you love the plants it is a pleasure. We spend many happy hours reading and re-reading the *Orchid World*, the *Orchid Review*, and the various works on the plants. Recently a friend kindly lent us Lucien Linden's famous work, and it is certainly one of the most lucid books on the subject I have had the pleasure of reading. He gives such close details of the actual surroundings of the plants he came across in their native habitat that all can use their own judgment as to the necessary treatment. The book is written in French, and I have not heard of any translation.

We decided to put some of the Mexican Lælias that we had just divided and repotted in the cradle in the lantern roof along with the Vandas. The thermometer shows about 40 degrs., and often less at night, and there is a big chink of air above them owing to a ventilator not closing. During the snow storms of the past few days I noticed them lightly powdered with snow which had blown in. They are quite dry, though let down and syringed on sunny days, and under these conditions are showing their roots beautifully. Linden speaks of the Mexican Lælias growing in the winter in frosty surroundings, so they evidently do not mind it under artificial cultivation. Their bulbs are bright and healthy, their leaves glossy, and, remember, they have only recently been rudely disturbed and broken up. I will report on them from time to time.

Odontonia brugensis.—This interesting hybrid was raised by Messrs. Sanders at Bruges, the parents being Odontoglossum Edwardii and Miltonia vexillaria. The plant resembles the Miltonia in habit and in the colour of the leaves. The flowers are of light purple colour, the broad labellum bearing a buff-yellow crest.

ODONTIODAS.

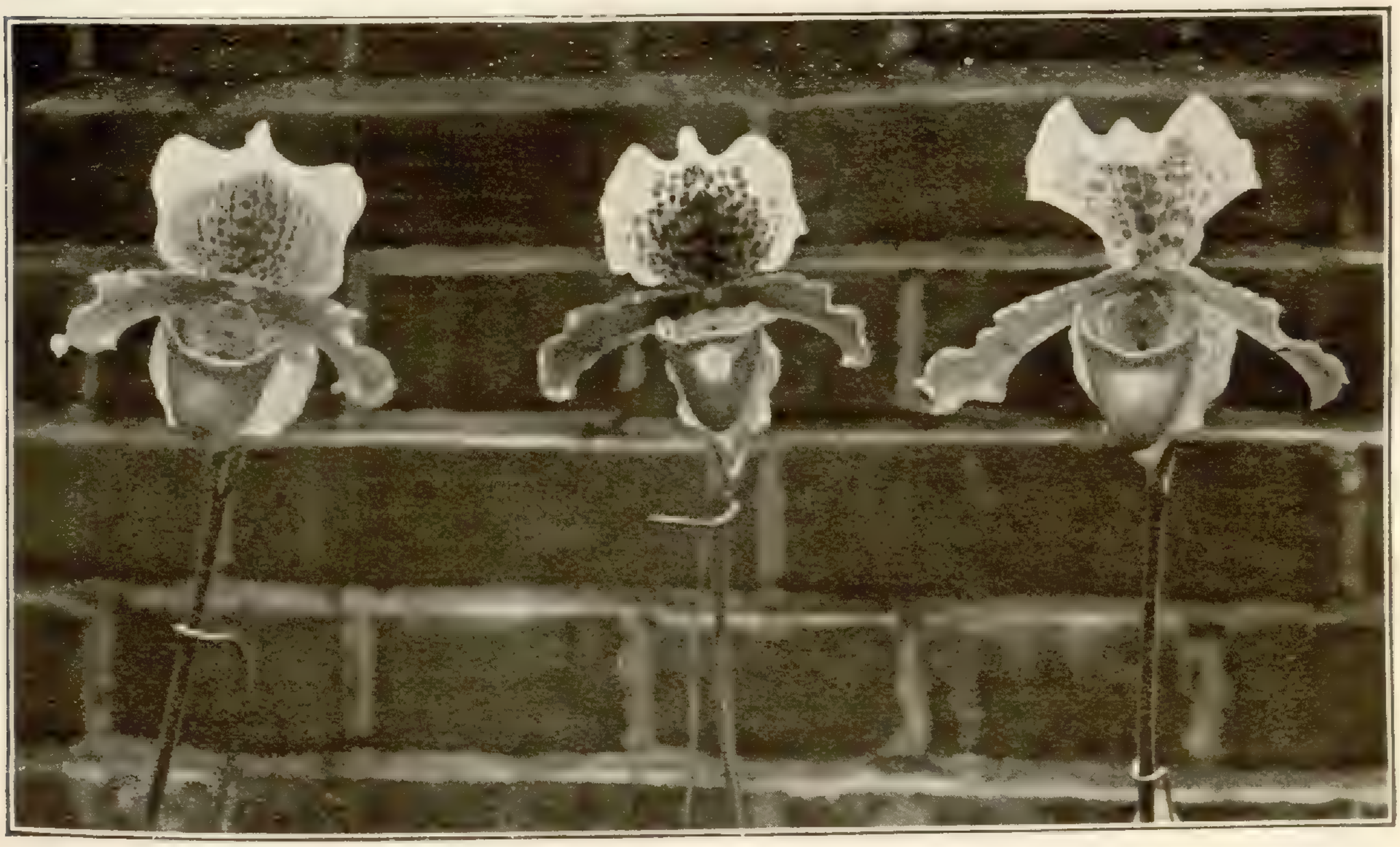
THE flowering in 1904 of the first Odontioda came as a great surprise, for until then no scarlet colour had been seen in the blotched Odontoglossums. Flowers of various shades of brown and purple were then in request, and high figures were obtained for any that were above the average in regard to the width of their segments. But the flowers of Cochlioda Nœzliana, small as they are by comparison, possessed a strong scarlet colour that proved capable of being infused into the larger flowers of the genus Odontoglossum. This combination, now so well known under the name Odontioda, has been extended, not only from primary to secondary hybrids, but recently much further, until some 370 different crosses have been recorded. This number includes the hybrids of Cochlioda rosea, C. sanguinea, and C. vulcanica.

The early Odontiodas were highly prized, mainly for their novelty of coloration. But as their size and shape left much to be desired, repeated efforts were made to produce flowers of Odontoglossum size with Cochlioda colour. The same difficulty that has so often occurred in other hybrids again presented itself, for whenever large flowers were obtained there was generally a considerable deficiency of the expected colour. In other words, the nearer the Odontiodas approached the Cochlioda colour, so much the more did they generally resemble Cochlioda as regards size and formation of the flower.

It is no exaggeration to state that tens of thousands of Odontiodas have been raised, and with all this experience to look back upon there does not appear to be any guiding line of definite importance to work upon. No one expects first-rate varieties to be obtained from parents having narrow segments, although it must not be forgotten that Odontoglossum Harryanum, with narrow petals, has yielded a remarkable result in the way of fine colour, if not in shape, and this is to be seen in Odontioda Brewii. But the first-class Odontioda of to-day must possess a perfect shape combined, with brilliancy of colour. Exceptions there are sure to be, but, speaking generally, an analysis of the parentage will show that the best Odontiodas are composed of Cochlioda Noezliana in conjunction with Odontoglossum crispum and O. Pescatorei. These Odontoglossums have been combined in O. ardentissimum (crispum × Pescatorei), O. eximium (crispum × ardentissimum), as well as with other species, and in mating these with Cochlioda Noezliana, either by itself or by its hybrids, most of the finest Odontiodas so far seen have been produced.

As time goes on still finer varieties are expected from the hybridists, who doubtless will follow closely on the lines of past successful results. Concerning the future, it may safely be said that the percentage of really

first-class novelties will gradually become less, having regard to the multitude of new crosses that have recently been made, for the further away we get from the primary hybrids the more uncertain do the results become. It may prove worth while to raise again some of the hybrids that are proved successes, utilising, if possible, finer varieties of the parents concerned, and rearing to the flowering stage a larger number of seedlings in order thereby to obtain increased opportunities for selection.



CYPRIPEDIUM BRITANNIA. C. TOKYO. C. INSIGNE HAREFIELD HALL.

CYPRIPEDIUM TOKYO.—This handsome new Cypripedium hybrid has been raised in the collection of Viscount M. Ijuin, Tokyo, Japan. The photograph was taken Dec. 20th, 1921, and the flower is described as being a fine acquisition and of noble appearance. The broad dorsal sepal has a greenish base and a wide white margin, while the bold spotting arranged in vertical lines is of brilliant purple colour. Our illustration shows this fine novelty with one of its parents on each side, and by comparison it is of richer coloration than either. The flower seen on the right is C. insigne Harefield Hall, and on the left C. Britannia, a hybrid of unknown parentage. The first record of C. Britannia was at the Royal Horticultural Society's meeting, held Oct. 25th, 1910, when it was exhibited by Messrs. Sanders, and given an Award of Merit. It was described as having a green dorsal sepal spotted with brown, and white at the apex, while the petals and lip are yellowish green, veined and tinged with brown. Fine Cypripediums, such as these, are always objects of attraction in any collection.

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR.
Brassocattleya Peace	C. Dusseldorfei × Bc. Digbyano-Mendelli	Duke of Marlborough.
Brassolæliocattleya Gatton Orange	C. chocoensis × Bl. Mrs. Gratrix ...	Sir J. Colman.
Brassolæliocattleya Our Princess	Lc. Thyone × Bc. Digbyano-Mossiæ ...	Flory & Black.
Brassolæliocattleya Pink Pearl ...	Blc. Everest × C. Trianæ	Sanders.
Cattleya Pharaoh	Adula × Fabia	Sanders.
Cymbidium Erica	Pauwelsii × grandiflorum	Sanders.
Cypripedium Æsmanii	Æson × Beeckmanii	P. Smith, Esq.
Cypripedium amberleyense	Lady Dillon × Mrs. Mostyn	H. Green, Esq.
Cypripedium Blanchette	niveum × Psyche	C. Cookson, Esq.
Cypripedium Carina	Leeanum × Villma	C. Cookson, Esq.
Cypripedium Challenger	Curtmanii × Beryl	A. Hanmer, Esq.
Cypripedium Christopherson	Christopher × Pyramus	S. Gratrix, Esq.
Cypripedium Grey Friar	Grovesianum × Tracyanum	Dr. R. N. Hartley.
Cypripedium Griqua	Graceæ × Lawrenceanum	C. Cookson, Esq.
Cypripedium Idaho	Mrs. F. Sander × Muriel Hollington	C. Cookson, Esq.
Cypripedium Leonora Cook	Earl of Tankerville × Mrs. Godman	Mrs. Bruce and Miss Wrigley.
Cypripedium Merlene	Lord Wolmer × Silene	P. Smith, Esq.
Cypripedium Piccanini	insigne × Leander	H. Green, Esq.
Cypripedium Tewne	Draco × Alcibiades	Hon. Robt. James.
Epidendrum Gatton Lilac	kewense × evectum	Sir J. Colman.
Epidendrum Lilac Queen	Stamfordianum × Boundii	Sir J. Colman.
Læliocattleya Bronze Prince ...	Lc. Ophir × C. Fabia	Sir J. Colman.
Læliocattleya Lumabilis	Lc. luminosa × C. amabilis	Sir J. Colman.
Læliocattleya Yellow Hammer ...	Lc. Hippolyta × Lc. Canhamiana ...	Sir J. Colman.
Odontioda Angela	O. Doris × Oda. Cooksoniæ	Charlesworth.
Odontioda Arlotta	Oda. heatonensis × O. eximium	Charlesworth.
Odontioda Borda	C. Noezliana × O. Nathaniel	Charlesworth.
Odontioda Dacia	O. eximium × Oda. Joan	Charlesworth.
Odontioda Ganesa	Oda. Brewii × O. President Poincare	Charlesworth.
Odontioda Hemera	Oda. Brewii × O. Aireworth	Charlesworth.
Odontioda Louisa	O. Louise × Oda. Chanticler	Pantia Ralli, Esq.
Odontioda Jupiter	O. Magali Sander × Oda. Joan	Sanders.
Odontoglossum Agapetum	amabile × Maillardianum	Charlesworth.
Odontoglossum Cardinal Wolsey	illustrissimum × Alexandrina	Charlesworth.
Odontoglossum Creola	Epicasta × Harryanum	Charlesworth.
Odontoglossum Creon	Jasper × Maillardianum	Charlesworth.
Odontoglossum leightmense	Rossii × promerens	Dr. R. N. Hartley.
Odontonia Milly	M. Bleuana × O. percultum	Charlesworth.
Odontonia Myra	O Ashworthianum × M. Charlesworthii	Charlesworth.
Odontonia Olivia	M. Bleuana × O. triumphans	Charlesworth.
Odontonia Sheila	M. Bleuana × O. Lambeauianum ...	Charlesworth.

BULBOPHYLLUM LEMNISCATOIDES.—This very curious species was first seen in the collection of Mynheer Van Lansberge, Château des Rees, Brummen Gueldre, Holland, about the year 1890, having been imported from Java. A remarkable point about it is the pendulous appendage attached to the back of each sepal. In 1908, it flowered in the Gatton Park Collection, and on May 25th of the following year it was exhibited by Sir Jeremiah Colman, Bart., at the Royal Horticultural Society, when it received a Botanical Certificate. A similar award was given to a well cultivated plant exhibited by Dr. F. Bedford, at the meeting of the Manchester Orchid Society held on January 19th, 1922.

ORCHID CHALLENGE CUP.

This Challenge Cup, valued at fifty guineas, is offered for competition at the Chelsea Show to amateurs only who employ not more than three assistants in their Orchid houses (including the head gardener), for a group of Orchids not exceeding sixty square feet.

R.H.S. AWARDS.—As some discussion arose at the last Chelsea Show regarding the awarding of medals to individual plants, the Royal Horticultural Society announces that in *quite exceptional* cases Medals may be awarded for objects of *extraordinary* merit. The two general forms of award are the First-class Certificate, and the Award of Merit. Cultural Commendation is given to individuals for objects envincing highly meritorious cultivation, and Certificates of Appreciation to those whose work is attended with horticultural scientific interest.

ROYAL HORTICULTURAL SOCIETY.

January 31*st*, 1922.

MEMBERS of the Committee present: F. J. Hanbury, Esq. (in the Chair), Messrs. J. O'Brien, R. Brooman-White, Clive Cookson, R. G. Thwaites, E. R. Ashton, H. T. Pitt, J. E. Shill, Gurney Wilson, S. W. Flory, J. T. Barker, A. Dye, Walter Cobb, C. J. Lucas and C. H. Curtis.

FIRST-CLASS CERTIFICATE.

Odontioda Cordor (Oda. Coronation × Odm. Doris), from Messrs. Armstrong & Brown. A vigorous plant carrying a full spike of ten flowers, all the segments broad and well displayed, the reddish colour being a combination of the scarlet in the Cochlioda parent and the rose-purple derived from the Odontoglossum.

AWARDS OF MERIT.

Brassocattleya Ruby (C. labiata × Bc. Mrs. J. Leemann), from Messrs. Stuart Low & Co. A very attractive hybrid, which carried a spike of three large flowers, the segments prettily crisped at the margin and the extensive labellum fringed. The colour is bright rose-purple throughout.

Odontoglossum crispum Hero, from Messrs. Charlesworth & Co. A fine variety in regard to the thick texture, and especially so in the wide segments of cream-white nature. The spike carried nine flowers, the sepals having a single blotch of colour, as in varieties of the Bonnyanum section.

Odontioda Antinous (Oda. Coronation × Odm. exultans), from Messrs. Armstrong & Brown. The plant is as yet immature, but gave much promise of finer results. The spike of three flowers showed intense crimson colour, the labellum rose tinted.

GROUPS.

Messrs. Sanders were awarded a Silver Flora Medal for an extensive exhibit, containing, along the back, some fine Cymbidiums, of which C. Tracyanum leopardinum, with a spike of twelve flowers, was very distinct. Cattleyas were represented by fine forms of Octave Doin, Monarch and the white Ashtoniæ, as well as the beautiful C. Enid var. Gratrixiæ. An interesting plant was Otochilus fuscus, with an arching spike of seventeen small flowers, also Cœlogyne intermedia (cristata × Massangeana), and C. speciosa albens, with a whitish labellum. There were many excellent Cypripediums, a distinct variety being seen in C. Maudiæ coloratum, with purple-brown colouring. The scarce Sarcochilus Hartmannii and the curious Dendrobium Cœlogyne showed to advantage in the front row.

Messrs. Charlesworth & Co. obtained a Silver Banksian Medal for a select group of finely-grown plants. Included in it were Odontoglossum, Tityus, of violet colour tinged with rose; the pretty Od. eximium virginale

with pure-white flowers; Od. Phillipsianum aureum, of bright golden-yellow colour; and the new Od. Eximatum (eximium × maculatum), with chestnut-brown markings. A fine plant of Lycaste Balliæ carried nine flowers, and Slc. Isabella had a spike of three rose-pink blooms.

Messrs. Flory & Black were awarded a Silver Banksian Medal for a neat exhibit in which were the interesting Odontioda St. Quintin, with round flowers, slightly suffused with yellow, and marked with brown on the central area of the segments; the albino Cattleya Evelyn Sander (Trianæ × Dusseldorfei Undine); Cypripedium aureum; Brassocattleya Floryi, an attractive hybrid between Bc. Mrs. J. Leeman and C. Empress Frederick; as well as pretty Læliocattleyas and Odontoglossums.

Messrs. Hassall & Co. exhibited Oncidioda Cooksoniæ (C. Noezliana × On. macranthum), a remarkable plant in which the leading bulb carried two spikes bearing a total of about 100 reddish flowers. Two excellent varieties of Cattleya Tityus were also staged.

G. W. Bird, Esq., Manor House, West Wickham, exhibited Odontioda Trebizond (Odm. Fascinator × Oda. Charlesworthii), carrying a branching spike of 32 dark crimson-coloured flowers.

Messrs. Armstrong & Brown showed Cattleya Trianæ The Premier, in fine form, good varieties of Lc. Schröderæ, and Cypripedium Satyr (Beryl × Hera Euryades), having the dorsal sepal white with prominent crimson-purple spotting.

February 14th, 1922.

Members of the Committee present:—F. J. Hanbury, Esq. (in the chair), Messrs. J. O'Brien (hon. sec.) J. Wilson Potter, Stuart Low, E. R. Ashton, T. Armstrong, A. McBean, R. Brooman White, C. J. Lucas, Gurney Wilson, A. Dye, S. W. Flory, C. H. Curtis, H. G. Alexander, Fred. K. Sander, J. E. Shill, H. T. Pitt, A. J. Kaye and J. Barker.

FIRST-CLASS CERTIFICATE.

Miltonia Lord Lambourne (parentage unrecorded), from Messrs. Charlesworth & Co. Unquestionably the finest variety yet seen in the vexillaria section. The small seedling plant carried a spike of three fully developed flowers, in formation resembling those of M. Bleuana (vexillaria × Rœzlii). The sepals and petals crimson-rose, the former showing a small whitish tip, the latter having a larger area of white at the apex: the expansive labellum veined and suffused with similar colour, and having a lighter zone round the edge; the crest at the base is yellow. A Silver-gilt Lindley Medal was also awarded to this novelty on account of its extraordinary colouration. This fine result will doubtless be the means of adding further colour to the Odontonia and Miltonioda sections.

AWARD OF MERIT.

Odontioda Cora (O. eximium × Oda. Coronation), from Messrs. Charlesworth & Co. The spike carried four flowers of medium size, of an attractive reddish colour, the tips of the segments tinted with rose.

GROUPS.

Baron Bruno Schröder, Englefield Green (gr. Mr. J. E. Shill), was awarded a Gold Medal for a most effective group, a Lindley Medal being also given for the unusually high state of cultivation. The area occupied was 130 square feet, and in it were over a dozen fine specimens of Cymbidium Pauwelsii, with a total of 20 spikes, each of which carried from 25-30 flowers. Interspersed were 40 magnificent Calanthes, bearing robust spikes four feet in height, with an average of 30 blooms. The variety was C. Baron Schröder, with the white variation called albiflora, and the dark coloured one known as superba. In the centre of the group was a noble plant of Læliocattleya Schröderæ, with a spike of four flowers, the thick creamy nature of the sepals and petals making a fine contrast with the rich purple labellum. A pleasing variety of Cattleya Mrs. J. Watson (C. Trianæ × C. Magie Raphæl) was also included.

Messrs. Sanders were awarded a Silver Flora Medal for a fine group in which were some attractive Cymbidiums; the best were, Merlin, Kittiwake, Martin, and Yellow Hammer. Among the Læliocattleyas were Phryne, with a spike of eight bright flowers, Fatima, with six orange-yellow blooms, and the graceful Cornuta. Several attractive Cypripediums, Angræcum sesquipedale, and some white Cattleyas were also staged. A rarity was seen in Cypripedium sub-læve.

Messrs. Flory & Black received a Silver Banksian Medal for a neat exhibit containing Sophrocattleya Nerissa, with a round flower of rose-pink colour, Slc. langleyensis, rich crimson-purple, Cattleya General Pulteney (Octave Doin × Trianæ),C. Brenda, with snow-white blooms, Læliocattleya H. T. Pitt (C. Enid × Lc. Bella), with a spike of four fine flowers, and a creamy white variety of Cymbidium Alexanderi.

Messrs. J. & A. McBean staged a selection of choice Cattleyas, the best being C. Enid var. Kathleen, with white sepals and petals, the broad labellum streaked with amethyst-purple. C. Caroline (Enid × Percivaliana), and Lc. Eunice alba (C. chocoensis alba × L. anceps), were very pleasing. Other fine hybrids were seen in Bc. Minerva, of delicate colouration, Bc. Bianca, and Lc. Arcturus, the latter with four flowers of warm cerise colour.

Lieut-Col. Sir George Holford, K.C.V.O., exhibited Sophrolæliocattleya Prudence (Sl. Orpetii × C. Fabia), with a couple of spikes each bearing two rose-crimson flowers, the throat golden.

MANCHESTER ORCHID SOCIETY.

February 2nd, 1922.

MEMBERS of the Committee present:—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, B. J. Beckton, J. Birchenall, A. Burns, A. Coningsby, D. A. Cowan, J. Cypher, A. G. Ellwood, W. Giles, Dr. R. N. Hartley, J. Howes, A. Keeling, J. Lupton, D. McLeod, E. W. Thompson, and H. Arthur (secretary).

Silver-gilt Medals were awarded to Mrs. Bruce and Miss Wrigley, and to S. Gratrix, Esq., for collections of Cypripediums. A Large Silver Medal was awarded to A. Hanmer, Esq., a Silver Medal to Hy. Green, Esq., and a Bronze Medal to Dr. R. N. Hartley for interesting groups. Messrs. Cypher & Sons exhibited Cypripediums, Masdevallias and Cœlogynes, a Silver Medal being awarded.

FIRST-CLASS CERTIFICATES.

Odontoglossum crispum Hero, a large white flower of perfect shape; from S. Gratrix, Esq.

Odontoglossum Wilckeanum aureum, one of the best forms of this lovely yellow hybrid; from S. Gratrix, Esq.

Odontioda Viscount Lascelles, richly blotched with reddish brown, on a white ground; from S. Gratrix, Esq.

Cypripedium Memoria F. M. Ogilvie var. Invincible, a finely shaped flower, the dorsal sepal richly spotted; from S. Gratrix Esq.

Cymbidium Schlegelii, Fowler's var.; from Mrs. Bruce and Miss Wrigley.

Lycaste Skinneri var. Princess Mary, a large flower of beautiful rose-colour; from Mrs. Gratrix.

AWARDS OF MERIT.

Cypripedium Conference magnificum; from Hy. Green, Esq.

Cypripedium Cotswold (Blanche Moore × G. F. Moore); from Hy. Green, Esq.

Cypripedium Bantive (Gaston Bultel × leyburnense): from Hy. Green, Esq.

Odontoglossum crispum Lord Derby: from A. Hanmer, Esq.

Odontoglossum Dodeham magnificum; from A. Hanmer, Esq.

Odontioda Hanmeræ (Oda. Sanderæ × Odm. Jasper); from A. Hanmer, Esq.

Odontoglossum Lobbiæ; from Mrs. Bruce and Miss Wrigley.

Odontoglossum crispum Romeo; from S. Gratrix, Esq.

Cypripedium Verona var. Cyme; from Col. Sir J. Rutherford, Bart.

February 16th. 1922.

Members of the Committee present: Rev. J. Crombleholme (in the chair), Messrs. B. J. Beckton, J. Birchenall, A. Coningsby, D. A. Cowan,

J. C. Cowan, J. Cypher, J. Evans, J. Howes, A. Keeling, J. McNab, D. McLeod, E. W. Thompson, and H. Arthur (secretary).

A Silver-gilt Medal was awarded to S. Gratrix, Esq., for a group of Cypripediums; and Silver Medals to Rev. J. Crombleholme, and Messrs. Cypher & Sons for attractive exhibits.

FIRST-CLASS CERTIFICATES.

Odontoglossum Orestes var. Mary, white ground, almost covered with brown spots and blotches; from Mrs. Gratrix.

Lycaste Skinneri var. Our Princess, large flower, rose-colour with claret-colour on the lip; from Mrs. Gratrix.

Cypripedium Odin West Point var. (Antinous × Becktonii), dorsal sepal white, base green, dark purple spots on central area; from S. Gratrix, Esq.

Odontioda Bradshawiæ var. Brilliant, large flower of fine shape and well coloured; from A. Hanmer, Esq.

Cattleya Tityus var. The Emperor, very large flower, sepals and petals dark mauve, lip purple with yellow side lobes; from P. Smith, Esq.

Cattleya Douai var. Prince Henry, extra large flower of fine shape and pure-white; from D. Losh Thorpe, Esq.

AWARDS OF MERIT.

Cypripedium Hestia Edgemoor var.; Odm. amabile Princess; and Odm. Iphis; from A. Hanmer, Esq.

Cypripedium Pyramus West Point var.; and Lycaste Skinneri Perfect Gem; from S. Gratrix, Esq.

Cypripedium Aure-Euryades var. Whitecap; from the Rev. J. Crombleholme.

AWARDS OF APPRECIATION—FIRST-CLASS.

Odm. crispum West Point elegance; and Lycaste Baroness Schröder; from S. Gratrix, Esq.

Odontioda Coronation var. Rainbow; from Mrs. Gratrix.

Odontioda Colinge var. Gardenia; from the Rev. J. Crombleholme.

Odm. Joyce Hanmer; from A. Hanmer, Esq.

CULTURAL CERTIFICATE.

Mr. G. Giles for Odontioda Bradshawiæ var. Brilliant.

VANDA ROEBLINGIANA.—A remarkable species, introduced from the vicinity of Singapore by Messrs. Low & Co., who flowered it in the year 1894. It is allied to V. limbata and V. brunnea, but differs from every other in having the narrow lip dilated in front into a pair of large spreading halbert-shaped lobes. The flowers are deep brown, irregularly veined with yellowish green, except the side lobes, which are white, streaked with purple.

THE ORCHID REVIEW.

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NOTES.

BULBOPHYLLUM MACROBULBUM (BALFOURIANUM).—Knowing that the pages of the *Orchid Review* are open to help amateurs, I should like to have some information as to the flowering of Bulbophyllum Balfourianum. In 1915 I obtained a part of the plant shewn by Messrs. Sanders at the Royal Horticultural Society, but have not succeeded in flowering it as yet. It has made a good growth every year with enormous bulbs, and it is now making a new one, with a leaf 24½ inches long and 4⅞ inch broad. Last spring I took off the original bulbs and potted them up, and from them I obtained a new growth last year. They are now making a second growth. There is no doubt that the plants grow well with me, if only I could get them to flower. —J. C. B. FLETCHER, Mundham Vicarage, Chichester.

WHEN cultivating Orchids for Mr. E. V. Low at Vale Bridge, Haywards Heath, there was a fine plant of Bulbophyllum Balfourianum which had not flowered for several years, so it was dried carefully until the bulbs showed signs of being in need of water. Soon afterwards the plant recommenced activity, and water was applied, at first sparingly, and then in increased quantities as the new growth made headway. On the completion of the bulb a flower spike was produced. I am convinced that all Orchids require a period of rest under drier conditions, and the rather severe ripening that the above plant thereby received no doubt lead to the following bulb being sufficiently vigorous to yield a flower spike.—FRED. GREENFIELD, Haywards Heath.

BULBOPHYLLUM BALFOURIANUM grows well in the Rosslyn collection at Stamford Hill, London, N. It is kept in the Cypripedium house, where the temperature in winter is maintained at 65° at night and 70° during the day, with a corresponding increase in summer. The plant receives an abundance of moisture, and is never allowed to remain dry long enough for the sphagnum moss to be killed. No difficulty is experienced in flowering it. In June, 1919, it produced three spikes with an aggregate of fourteen flowers, and was awarded "Cultural Commendation" when exhibited at the R.H.S. One year it flowered twice.—F. W. THURGOOD.

SALE OF VALUABLE CATTLEYAS.—Messrs. Protheroe and Morris have been instructed by A. Hanmer, Esq., to dispose of his entire collection of valuable Cattleyas, comprising some 200 of the finest modern hybrids, together with a number of fine Cypripediums aad Odontoglossums of the best varieties. The plants will be sold by auction at The Coal Exchange, Market Place, Manchester, on Wednesday, April 19th. Messrs. Protheroe and Morris have also been instructed to sell on April 4th and following days the entire stock of Orchids of Mr. C. F. Waters, Balcombe, Sussex, and on May 9th and 10th the first portion of the collection of Orchids formed by the late Mr. Wm. Bolton, at Wilderspool, Warrington. Further particulars will be found in our advertisement pages.

OBITUARY.—J. F. DUTHIE.—We regret to record the death, which took place at West Worthing on February 23rd, of Mr. John Firminger Duthie, F.L.S., aged 76, late Director of the Botanical Survey of Northern India, and author of *Orchids of the North-Western Himalaya*, published in 1906, as vol. ix., pt. ii., of "Annals of the Royal Botanic Garden, Calcutta." In this work, Duthie gave the number of species then known to occur within the limits of the Western Himalaya as 173. Of these 59 are epiphytes and 114 terrestrial, the number of genera represented being 45. With regard to their flowering season, he stated that although there is no single month of the year during which one or more species may not be found in flower, there are, however, three distinct flowering periods, viz.:—(1) Before the rainy season, from March to June; (2) During the rainy season; (3) After the rainy season, from the middle of September and onwards. Cymbidium Mackinnoni, which is remarkable on account of its flowering in mid-winter at an elevation of about 5,000 feet, and within the region of heavy snowfall, is one of the species originally described by Duthie. His name will also be remembered by Liparis Duthiei and Herminium Duthiei.

BRASSOCATTLÆLIA GOVERI.—A flower of this promising new hybrid comes from the collection of Richard G. Thwaites, Esq., Streatham Hill. It is the result of crossing Bc. Digbyano-Mossiæ with Lc. G. S. Ball. The sepals are buff coloured, the petals buff rose, and lip orange with a rose-purple front.

DENDROBIUM FORMOSUM.—Generally regarded as the finest of the white Dendrobes, this elegant species was introduced to British gardens from the Khasia Hills by Gibson, who sent it to Chatsworth in 1837, where it flowered in May of the following year. Some of the finest forms are said to have been found in the Mangrove swamps of the Andaman Islands, along the sea-coast, where in stormy weather the plants must be covered with sea-spray.

PLEUROTHALLIS GRANDIS.

THE photograph herewith reproduced of Pleurothallis grandis shows a fine specimen growing in a native pot eight inches in height. This large and very distinct species was described by Mr. R. A. Rolfe (*Kew Bulletin*, 1918, p. 234), from a plant sent to Kew by Mr. C. H. Lankester, to whom we are indebted for the photograph and additional information. P. grandis belongs to the Macrophyllæ Racemosæ group of the genus. It is

PLEUROTHALLIS GRANDIS

a native of Costa Rica, and common in the disticts of Cachi, Orosi, and Navarro, especially on the ridges where the forest is less dense, and it may often be found there growing as a terrestrial in the rich leaf mould which accumulates in depressions in the ground. The main interest is the large size of the plant, the longest leaf with stem measured 37 inches. The spikes carry up to fifty pendant flowers, the colour being green, more or less suffused and striped on the sepals with brownish red. The bulk of the species of this genus are very small, many being almost of microscopic form.

Mr. Lankester also sends a photograph, unfortunately not suitable for

reproduction, of a still larger Pleurothallis, in which the flowers, though smaller, are individually much prettier, being hyaline whitish, with fine purple spots. Apparently it is a very much rarer plant, and probably not yet described; unfortunately, the specimen despatched to Kew perished on the journey. Two other species of this genus found by Mr. Lankester in Costa Rica are Pleurothallis Lankesteri, which flowered at Kew in June, 1914, and P. costaricensis, in May, 1916. The former is a curious little plant, and inconspicuous, owing to the fact that the small deep yellow flowers are borne in fascicles below the leaves. The latter species bears an elongated raceme, the flower light greenish yellow, with rather darker nerves and lip.

HELCIA SANGUINOLENTA.

AMONG the interesting plants exhibited by Messrs. Stuart Low & Co., at the meeting of the Royal Horticultural Society held on February 28th was Helcia sanguinolenta, a very rare species also known as Trichopilis sanguinolenta. It was originally discovered on the Ecuadorean Andes in 1841, and Lindley, in a note regarding its early history (*Botanical Register*, March, 1845), stated that among the unexamined plants collected by Hartweg for the Horticultural Society was a plant supposed to be a species of Trichopilia, of which it has entirely the habit. Instead of its column being rolled up in the labellum, it stands erect and clear of it. Instead of the anther having but one cell, it has two. Instead of the anther-bed having two lateral lacerated processes it is surrounded by a deep fringed border. Finally, instead of the lip being perfectly smooth, continuous, and destitute of all appendages at the base, it is contracted about the middle, below the contraction furnished with a pair of thick fleshy lobes hollowed out in the middle and standing erect on each side of the column, without, however, touching it; and the space between those lobes, forming the very base of the lip, is a hollow pit. Upon looking at this curious apparatus in front, the anther and column look like an old-fashioned head-dress peeping over one of those starched high collars, such as ladies wore in the days of Queen Elizabeth; or through a horse collar decorated with gaudy ribbons; and this has led to the name, which has been fashioned out of Halcium, a word said to mean the collar of a horse, though, considering its obvious derivation, one would rather have imagined to signify his traces.

MAXILLARIA VENUSTA.—A charming species originally discovered by Linden in 1842 on the Cordillera of Venezuela, in the province of Merida, but not introduced until the year 1851, when it was re-discovered by Schlim on the eastern Cordillera of Colombia, near Ocana, and sent by him to M. Linden's nursery at Brussels, where it flowered for the first time in Europe in 1854.

HYBRIDS OF GYMNADENIA CONOPSEA AND CŒLOGLOSSUM VIRIDE.

BY REV. T. STEPHENSON, D.D., AND MR. T. A. STEPHENSON, M.Sc.

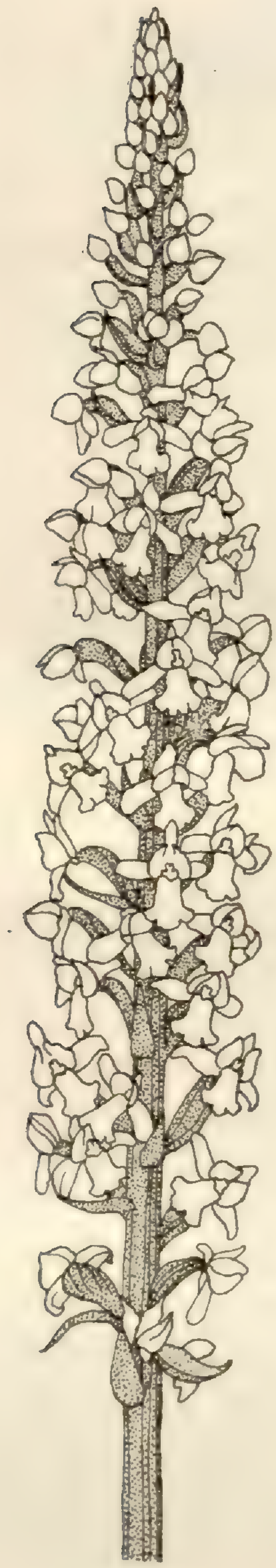
THIS exceedingly interesting hybrid has not been reported hitherto on the Continent; but several specimens have been found near Winchester, belonging to two main types, whilst a third type, undescribed up till now, has been found in Salop by the late Mr. R. F. Burton. Of this last type a pen and ink drawing is here reproduced, with outline sketches showing the chief features of the flowers of the three types.

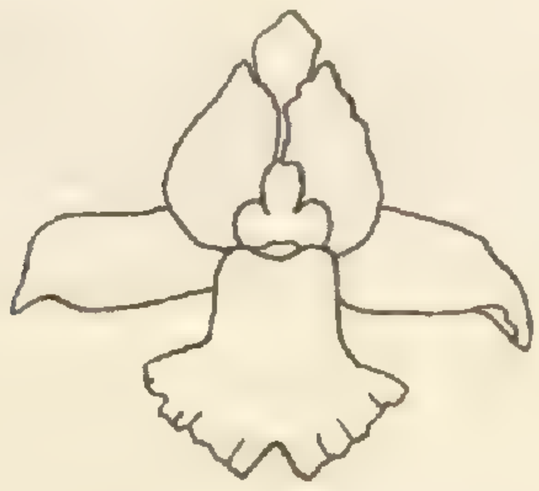
The hybrid was first found near Winchester by Mr. Jackson, in 1909, and is described in the report of the Winchester College Natural History Society, 1909-11, pp. 5, 6, under the name Gymplatanthera Jacksonii, by Rev. R. Quirk, who has done much good work on the Winchester Orchids. Of this plant a plate is given in the report for 1912-13, from a drawing by Miss Corfe, which is also reproduced in the report of the Botanical Exchange Club, 1917, pl. 12. Of this type several specimens have been found. A second type is described in the Wincheseter report, 1913-16, pp. 9, 10, and a plate given from a drawing by Miss Corfe, which also appears in the report of the Botanical Exchange Club, 1917, as pl. 148.

In June 1916, a beautiful plant was sent to us by Mr. R. F. Burton, of Longner Hall, Salop, which he described as a spurless Gymnadenia conopsea. To us it seemed that Cœloglossum viride must enter into the parentage of the plant, and we wrote to enquire if that species grew in the vicinity from which the hybrid was taken. We found that this was the case. A brief description of the three types is here appended.

Form A. The first type is described as being about two parts Gymnadenia conopsea to one of Cœloglossum viride. It is shorter than the average Scented Orchis, and with more leaf-like bracts. The flower is pink or purplish, tinged especially towards the margins with green. From the plate it would appear that the sepals were darker than the petals. The shape of the lip is much nearer Gymanadenia conopsea than the other parent, and the spur is very long and slender, certainly more than twice the length of the ovary, as seen in the plate, though it is described in the text as being shorter than in Gymnadenia conopsea. Probably the flower is scented, though this is not mentioned. The outline (enlarged) of this type is given as fig. A, a rough copy of the plate taken from Miss Corfe's drawing. The upper petals and sepals are not hooded, but open, thus diverging in type from both parents.

Form B. This is much nearer to Cœloglossum viride. The flower is more of the shape of the latter, and the tints, in comparision with form A, being generally reversed, the centre being greenish and the margins rose-





C 1.

C 2.

B 1.

B 2.

A.

GYMNADENIA CONOPSEA × CŒLOGLOSSUM VIRIDE.

(Form C., whole spike, and outlines of the lips of the three types. From a pen-and-ink drawing by Mr. T. A. Stephenson.)

purple. The lip is shaped very much like that of Cœloglossum viride, but the spur is intermediate, being 5-6 mm. long, when fully developed, and shorter than the ovary. The upper sepal and petals form a loose hood. This form is figured as B, 1 and 2, also taken from Miss Corfe's drawing. What appears to be a variant of this type is described in the Winchester report, 1916-17, p. 12 (*Bot. Exch. Club Rep.*, 1917, *p.* 180). The plant was

six inches high, the sepals pinkish on the back, and yellowish in front, the petals yellowish on both sides, the lip longer than in Gymnadenia conopsea, pink at the sides and yellowish-white in the centre, and the spur shorter than the ovary.

Form C. This is only known from a single specimen with a spike 16 cm. in length. The flowers have blunt, pale-green sepals, and rose-lilac lip and petals. The spur is very small, as in Cœloglossum viride, or even smaller. The flower is scented, but differently from Gymnadenia conopsea. The lip is outlined in fig. C, 1 and 2. The figure of the whole spike is reproduced from a pen and ink drawing of the living plant by T. A. Stephenson.

A comparison of the forms shows that in form of lip A and C approach nearer Gymnadenia conopsea, but B nearer Cœloglossum viride. As regards the spur, A even exceeds Gymnadenia conopsea, B is intermediate, and C is like Cœloglossum viride. In colour, A and B blend the parent-colours, but B with the tints of A roughly reversed, whilst C has the green sepals of Cœloglossum viride and the purple lip and petals of Gymnadenia conopsea. In the height of the plants, A is intermediate, B is short and C tall.

We should like to add a brief tribute to the memory of Mr. R. F. Burton, who discovered the plant now first described. He passed beyond the veil on January 7th, at the age of 57, after a trying illness which lasted three years. He was an expert botanist and entomologist; as a botanist, specially interested in the culture of plants and their naturalisation in this country. He was most interested in British Orchids and highly successful in their cultivation. If he had published the results of his work his name would have been well known. As it is, he somewhat shrank from this, but was always most willing to place all his knowledge and skill at the disposal of other students in the field. At one time he travelled in the East, and Capt. Monckton's "Last Days in New Guinea" is dedicated to him. His most important work was in the study of insects and their parasites, especially of malaria-carrying mosquitos, with a view to the prevention of disease. Much of the data he collected has been published in the reports of the Local Government Board, on Public Health and Medical Subjects, and in a Handbook of British Mosquitos, by W. D. Lang, published by the Trustees of the British Museum in 1920.

Orchid Paintings.—At the meeting of the Royal Horticultural Society, held February 28th, a Silver Grenfell Medal was awarded to Mr. T. A. Stephenson, M.Sc., of Aberystwyth, for an exhibit of excellent water-colour drawings of British Orchids, comprising species and hybrids. A few European varieties were also shown.

THE GYNOSTEMIUM IN THE GENUS DIURIS.

UNDER the above title, a paper read by Dr. R. S. Rogers before the Royal Society of South Australia on October 13th, 1921, has been published in the Society's *Transactions* (vol. xlv., p. 264). The genus Diuris is peculiarly Australian, and does not extend to New Zealand or to any of the adjacent islands. "Its gynostemium," remarks the author, "is interesting, and apparently marks an important and rather primitive stage in the evolution of the Orchidaceæ. The column, or essential organ of the Order, in its generally accepted sense, can hardly be said to exist, as the male and female elements arise separately from the receptacle of the flower, and only enjoy a brief and adventitious union during the short period of maturity."

After describing the construction of the anther, Dr. Rogers states: "Up to this point anther and pollinia together form an entity, entirely separate from other portions of the sexual apparatus." Following a description of the stigmatic-plate and the position of the style, we read: "Dehiscence is now about to take place, and the rostellar-disc begins to secrete freely. . . . The raised line or lines at the base of the lamina are exerting an increasing pressure against the stigmatic-plate in their progressive development, thus forcing the sexual elements of the flower more closely together. Dehiscence occurs, and for the first time union is established between the male and female elements of the plant. The apices of the pollinia become adherent to the back of the rostellar-disc. There is no caudicle. The flower expands; the insect-visitor removes the 'viscid-disc' together with the attached pollinia, and cross-pollination is then effected in the usual manner."

"It is interesting in this connection," adds Dr. Rogers, "to examine the gynostemium of Prasophyllum, which has reached a higher degree of specialization than that of Diuris. Here the filament of the anther is still retained, but it has become adnate to the base of the style, so as to form a very short column." Prasophyllum is almost exclusively an Australian genus, its only extension of range being to New Zealand.

The two genera, Diuris and Prasophyllum, do not appear to have developed along the usually accepted lines of evolution, and these, states Dr. Rogers, are presumably as follows: (1) Suppression of some of the sexual parts and confluence of the rest to form a column; (2) aggregation of the pollen into pollen-masses; (3) formation of a rostellum; (4) appearance of a 'viscid disc' on the rostellum; (5) Development of a caudicle or its equivalent; (6) conversion of the pollinia from mealy or granular into waxy masses. Both are in possession of some of the more recently acquired characters of the Order, whereas in the one the column has not yet developed, and in the other it is apparently still in an early stage of evolution. Plate XXII. includes four analytical figures of Diuris longifolia.

CYMBIDIUM ROSEUM.

AT Frant Court, Sussex, the residence of Harold B. Smith, Esq., a most attractive selection of Cymbidiums was in flower early in March, the more attractive, perhaps, by reason of the wet inclement weather which then prevailed. Conspicuous among them, on account of its pleasing colour and elegant spikes, was Cymbidium roseum. The spikes, some three feet in height, carried eighteen to twenty flowers, each about four inches across, and with nearly equal segments, the petals slightly the narrower; in colour creamy white, flushed with a charming tint which, for want of a definite term, can be described as khaki-rose, with deeper rose veinings extending the length of the segments. The lip, somewhat pointed, has on the front lobe marginal spots—almost blotches, more or less confluent, of crimson-rose, making it very striking. Centrally, the lobe is white, with a well-defined median line of dark crimson. The side lobes, whitish externally, are, on their inner surfaces, strongly marked with interrupted lines and spots of crimson-rose, so vivid as to show through the texture. Column whitish, reddened apically, its inner surface marked as on the side lobes, anther cap yellowish. The keels of the lip are sparsely spotted with crimson on a white ground. At the base of each segment and the column, in the latter case on a yellow suffusion, are a number of minute rosy dots, larger on the petals, but more numerous on the sepals and the column. The habit is not unlike that of C. Sanderi (insigne), but the foliage is broader and of a deeper green, but not so erect.

The species roseum, for apparently it is a species, was first introduced by Messrs. Sanders in 1913. Natural hybridity was hazarded in the effort to account for its difference and resemblance to other Cymbidiums from the same district—Annam. C. Sanderi was one parent suggested, but seen in maturity, as are the plants at Frant Court, it can hardly be connected with the parentage of roseum. The lip is somewhat compressed and pointed, and in shape, but not in colour, is reminiscent of C. giganteum rather than C. Sanderi. The colouring is quite distinct from both. Still the possibility of hybridity remains, for Messrs. Sanders exhibited on February 28th Cymbidium Titania, recorded as between roseum and Sanderi. C. roseum had certainly imparted its colour to the hybrid, but on the other hand so influenced was the shape that the lip might have been taken for a colour form of Sanderi, its bluntly rounded outline favouring that species entirely; a modificatiou might be anticipated, did Sanderi enter into the paternity of roseum, as in that case Titania would have more Sanderi blood in its composition than of any other species. The minute spots present on the base of each segment, both in roseum and Sanderi, may or may not evidence interbreeding.

Localised as these Cymbidiums were in their native habitat, many of the plants from the same district may have developed similar characteristics, as naturally their requirements would be more or less similar, and there yet remains the hypothesis of a distinct, undiscovered, and possibly strongly characterized species. Whatever it may be, C. roseum remains a most pleasing addition to the Cymbidium house, being floriferous and easily grown.

At Frant Court were several well-grown examples of Cymbidium Pauwelsii (Lowianum × Sanderi), carrying up to twenty-five flowers on bold well-developed spikes. Though in Pauwelsii, up to the present, no outstanding colour form has appeared, no two varieties are quite alike. Always the bright lip colour, derived from Lowianum, is present, but the sepals and petals show innumerable gradations from red-brown to ochreous yellow.

Cymbidium Gottianum Frant Court var. well deserves its varietal name. The brighter tints of the flowers, and their number, ten on the spike, give it prominence to other Gottianums. Well-balanced and typical of the hybrid in size and shape, the segments are more deeply flushed than in the type, and the labellum is far more highly coloured. Bright red, occasionally broken and always margined with white, extends to the apices of the side lobes, while a central median line and a few dots of the same colour ornament the front lobe. The rose lines present on the lateral divisions of the lip are in this form strongly exaggerated, both in number and colour. Although C. Gottianum (eburneum × Sanderi) usually bears but three to five flowers on a spike, the individual blooms are among the largest of the genus, and are always admired on account of their wax-like purity. A good typical plant was fortunately with the Frant Court variety for comparison, and it is to be hoped that the taller spikes and greater number of flowers produced by the latter will yet be developed in other varieties of this handsome hybrid. E.C.

CYPRIPEDIUM VILLOSUM.—This well-known species was first discovered by Thos. Lobb, on the mountains near Moulmein, at 4-5,000 ft. elevation, and introduced by Messrs. Veitch in 1853. Subsequently, in the same region it was found by the Rev. C. Parish, who has stated that it is never found below 4,000 ft. elevation. Farther North, near Tongu, it has been found growing in large masses in moss and decaying vegetable matter high up on the branches of trees. The variety Boxallii, sometimes regarded as a distinct species, was introduced by Messrs. Low & Co. in 1877, through the collector whose name it bears. It differs from the type in having the central area of the dorsal sepal covered with numerous blackish spots that are more or less confluent in the middle and towards the base.

ODONTONIA CHARLESWORTHII.

AMONG the novelties that have appeared in recent years few have evoked so much interest as Odontonia Charlesworthii, a scarce hybrid between the Colombian Miltonia vexillaria and the Guatemalan Odontoglossum Uro-Skinneri. In the adjoining illustration it will be seen that the characters of both parental species are well represented, the flower being, in fact, intermediate in this respect, as is generally the case with primary hybrids. The sepals and petals are greenish, heavily marked with crimson; the expansive labellum, which is undoubtedly the chief attraction, is bright rosy-purple, while the insignificant column is dotted with similar colour, and the two-keeled crest at the base is stained with brownish yellow. Although the labellum may be somewhat smaller than that seen in the Miltonia parent, there is as a compensating character, a considerable increase in its texture, thus overcoming the fragile nature of M. vexillaria. Odontonia Charlesworthii made its first appearance at the Royal Horticultural Society, July 14th, 1914, when a First-class Certificate was awarded. On August 17th of the following year a similar award was given to Fowler's variety. And at the meeting of the Manchester Orchid Society, held on January 5th of the present year, a First-class

ODONTONIA CHARLESWORTHII, A BEAUTIFUL HYBRID BETWEEN O. URO-SKINNERI AND M. VEXILLARIA.

Certificate and Silver Medal were granted to the plant exhibited by Dr. F. Bedford, who purchased it in a very weak state at the sale of the late Mr. F. M. Ogilvie's collection at Oxford.

SELF-FERTILISATION OF CYPRIPEDIUM SCHLIMII.

FOR some time after its first introduction in 1854, Cypripedium Schlimii was a very rare plant in British Gardens, and horticulturists took advantage of its self-fertilising power to raise young plants from seed. Regarding this peculiarity, Messrs. Veitch have stated (*Manual of Orchidaceous Plants*, iv., p. 68): "The sexual apparatus of this species differs in no essential character from others of the genus, but, as is the case with all Selenipedia, the relative position of the stigmatic disc to the other parts is somewhat modified; this disc is rhomboidal in outline, much thickened beneath, especially on the basal side, forming there a conical protuberance that stands immediatly below the anthers, is nearly parallel with the staminode, and projects beyond it. The anthers are normal as regards form and position, but the glutinous envelope is exceedingly thin, loses its viscidity after the flower has been some time expanded, and becomes dry; the granular pollen is then set free upon any slight motion imparted to the flower; and as these granules are exceedingly minute and numerous, it can scarcely happen that some of them do not fall upon the stigmatic disc, especially the thickened part that projects immediately below the anthers, and the ovary thence becomes fertilised. The consequence to the plant is the enfeebling of its constitution, by which the species is one of the most difficult to import alive, and scarcely less difficult to keep alive when so imported."

THUNIAS.—Plants belonging to this genus should be grown in the East Indian house, and be treated liberally with water. The drainage should be perfect, and the potting material should be rough peat and sphagnum in about equal parts. After the flowers have passed and the leaves have fallen, water should be entirely withheld, and the plants removed to a lower temperature. When growing they enjoy an abundance of sunshine. As soon as they show signs of growth, about the beginning of March, they should be potted, and when the young roots appear water should be given them sparingly. Thunias may be propagated by division, and also by cutting up the old stems into pieces about six inches long, and inserting them in a pot in the same manner as ordinary cuttings. This latter operation should be effected just when the young growths are complete.—B. S. WILLIAMS.

ORCHIDS WANTED.—Messrs. A. J. Keeling & Sons require various Cypripediums, see advt.

NOMENCLATURE OF MULTIGENERIC HYBRIDS.

WHEN the first generic hybrids made their appearance it was a comparatively easy matter to form suitable names. Læliocattleya, Brassocattleya and Sophrocattleya are well-known examples in which the parental names have been combined for the purpose of classification. But with the combining of three genera longer names came into use, and with such cumbersome terms as Brassolæliocattleya it became evident that a new scheme of nomenclature would be necessary to prevent further examples. At the International Congress held at Brussels in 1910, it was decided that, in future, multigeneric hybrids should receive a conventional generic name, preferably that of a distinguished man, with the termination "ara."

VUYLSTEKEARA. The first example to come under the new scheme was the hybrid between Cochlioda Noezliana and Odontonia Lairresseæ exhibited by M. Jules Hye at the Royal International Horticultural Exhibition of 1912. It contained the three genera Cochlioda, Odontoglossum and Miltonia, and was recorded as Vuylstekeara Hyeana. Fifteen additional hybrids containing the same three genera have since been registered, and judging by recent results, this number will soon be considerably increased.

LOWIARA. The combination of the three genera Sophronitis, Lælia and Brassavola was first flowered by Messrs. Stuart Low & Co., who exhibited the plant at the Royal Horticultural Society, November 19th, 1912, under the name Lowiara insignis. It was obtained by crossing Sophronitis grandiflora with Brassolælia Helen. Lowiara Paul (Bl. Mrs. M. Gratrix × Sl. Psyche), raised in the collection of Col. Stephenson R. Clarke, C.B., is the only other example yet flowered.

WILSONARA. The combination of Cochlioda, Odontoglossum and Oncidium was flowered by Messrs. Charlesworth & Co. in 1916, and recorded as Wilsonara insignis (Odontoglossum illustrissimum × Oncidioda Charlesworthii). A second example exists in Wilsonara Sanderæ, the result of crossing Odontioda Sanderæ with Oncidium macranthum, and a third in W. majalis (Odontioda Chantecler × Oncidium corynephorum).

ROLFEARA. The mating of Sophrocattleya Blackii with Brassocattleya Mrs. J. Leemann brought about the fusion of the three genera Cattleya, Brassavola and Sophronitis. This hybrid was raised in the collection of Mr. Richd. G. Thwaites and first flowered during the autumn of 1918, being recorded in the early part of the following year as Rolfeara rubescens. Two other hybrids in this section have since been raised.

CHARLESWORTHIARA. At the meeting of the Royal Horticultural Society held June 17th, 1919, Messrs. Charlesworth & Co. exhibited Charlesworthiara Alpha, the result of crossing Miltonioda Ajax (Cochlioda

Noezliana × Miltonia Schroderiana) with Oncidioda Cooksoniæ (C. Noezliana × Oncidium macranthum), thus bringing together the three genera Cochlioda, Miltonia and Oncidium. A second example exists in Charlesworthiara nobilis (Miltonioda Ajax × Oncidium macranthum).

POTINARA. The multigeneric hybrids so far enumerated have not contained more than three genera in any one example, but in Potinara this number is increased to four. At the meeting of the Royal Horticultural Society held February 28th, Messrs. Charlesworth & Co. exhibited Potinara Juliettæ, a remarkable and beautiful hybrid produced by crossing Sophrolæliocattleya Marathon with Brassocattleya Ena, thus combining the four genera Sophronitis, Lælia, Cattleya and Brassavola. It is named in honour of Mons. Julien Potin, President of the Horticultural Society of France, and Chairman of its Orchid Committee. At the following meeting of the above Society, held March 14th, Messrs. Flory and Black exhibited Potinara Gratrixiæ, the result of crossing Sophrolælia Gratrixiæ with Brassocattleya Mrs. J. Leemann.

DRYING ORCHID FLOWERS.

IN order to obtain satisfactory results in drying flowers it is necessary to use fairly fresh specimens, any that have commenced to wither and decompose should be discarded. Select a box of suitable size, and cover the bottom with about an inch of dry, fine sand, on which arrange the flowers so that they do not touch one another. Then work in additional sand under the segments, taking care that the natural shape of the flower is preserved, and fill up the box so that at least an inch of sand is above the highest portion of the flower. The box should then be placed in a dry and warm place for a few days, after which the flowers, if thoroughly dry, may be removed. If the drying is much delayed there is a likelihood of the flowers decomposing before the process is completed. It is rarely possible to preserve the colour, and fleshy flowers like Lycastes generally turn a dark brown. Although by this method the flowers are preserved in their natural shape, or very nearly so, they occupy more storage space than most amateurs care to afford.

Another method, and one that is generally adopted, is by pressing. The flowers should be laid between sheets of porous paper, such as blotting paper, using several sheets to allow for irregularities in the thickness of the various parts of the flower, and then placed under a board with a moderate weight on the top. The paper should be changed after a couple of days or more, repeating the process until the flowers are quite dry, when they can be arranged on trays in a cabinet or in a scrap-book having thick leaves.

ORCHIDS OF MOUNT KINABALU, BRITISH NORTH BORNEO.

IN our issue of November, 1921, reference was made to the ascent of Mount Kinabalu by Miss Lilian S. Gibbs in 1909-10, and the Orchids she discovered. In 1915, this mountain—an isolated mass of granite 13,455 feet high—was ascended by Chaplain Joseph Clemens, U.S.A., accompanied by Mrs. Clemens, D. LeRoy Topping, and native helpers, for the purpose of making botanical collections. A large number of interesting Orchids were found, and a full account of them by Mr. Oakes Ames, A.M., F.L.S., and Mr. Chas. Schweinfurth, is published in *Orchidaceæ*, Fascicle VI. (1920). issued from the Ames Botanical Laboratory, North Easton, Mass., U.S.A.

In the preface it is stated that Chaplain Clemens, "to keep his interest in the expedition constantly stimulated, decided to give his undivided attention to a single group of plants. He chose the Orchidaceæ. As a result of his efforts, one hundred and fifty-five Orchid species, in a condition suitable for identification, were secured. Of this number one hundred species proved to be new. He also secured one new genus. Chaplain Clemens spent about six weeks on the mountain. In that time he more than doubled the number of Orchid species known to be natives of Kinabalu."

"When we realise," remarks Mr. Oakes Ames, "that Borneo is one of the largest islands in the world, its area being five times the area of England and Wales; when we bear in mind that botanical exploration has not yet been undertaken systematically, and that a single collector who specialised in a single family, discovered in less than six weeks on one mountain one hundred species heretofore undescribed, we must prepare for extraordinary changes in any generalizations as to the extent and nature of the Bornean flora based on our present very incomplete knowledge. The Orchidaceæ, with eighty-seven genera and over eight hundred species, surpass numerically all other families of spermatophites natives to Borneo."

The preface concludes with the lines: "It is highly probable that intensive explorations throughout the year will bring to light many additions and confirm my belief that Mount Kinabalu will prove to be one of the richest mountains in the world in the diversity and interest of its Orchid flora."

No less than 52 genera and 222 species are enumerated. The botanical descriptions occupy some 230 pages, in addition to which there are eighteen excellent plates, each accompanied by an extra page giving the analytical notes. Regarding the genus Dendrochilum, of which several new species of unusual interest are described, it is stated that "with the additions herein noted, Dendrochilum, with forty-five species, becomes one of the largest of Bornean Orchid genera. Surely we may expect a rich harvest of interesting

acquisitions as intensive collecting brings to our attention the numerous species that must still await discovery. It would seem that Borneo will rival the Philippines as a home of Dendrochilum species and furnish material that will help to crystalize our knowledge of one of the most fascinating Orchid genera of the eastern tropics."

This sixth fascicle of *Orchidaceæ* is in every way a valuable addition to the attractive volumes already issued. The excellent high-class style in which the work is published is only surpassed by the skilful accuracy of the author, Mr. Oakes Ames, who, as well as being Director of the Botanic Gardens of Harvard University, enjoys a world-wide reputation as one of the foremost authorities on Orchidology.

ANGULOCASTE SANDERÆ.

THE first Angulocaste flowered in 1903, and was recorded as a hybrid between Anguloa Ruckeri and Lycaste Skinneri, but it has already been mentioned (vol. xxix, p. 33) that the second parent is more likely to have been Lycaste cruenta. In any case this hybrid still stands as the original Angulocaste. The second cross between these two genera appeared in 1921, when Messrs. Sanders exhibited Angulocaste Cooperi, the result of crossing A. Cliftonii with L. cruenta. It received an Award of Merit, Royal Horticultural Society, February 8th, 1921, the flowers being of Lycaste formation, pale yellow, with purple markings at the base of the petals.

The third example exists in Angulocaste Sanderæ, produced by crossing Anguloa Clowesii with Lycaste Skinnerii alba. It was shown by Messrs. Sanders at the meeting of the Royal Horticultural Society, held on Fedruary 28th, and received a First-class Certificate. Our illustration shows the formation of the flowers, which have much of the Lycaste habit about them, but the influence of the Anguloa parent is seen in the slightly concave shape of the sepals, and more especially in the formation of the labellum. The colour is pale lemon-yellow, the lip having a darker yellow centre and with some claret-red markings at the base.

It is somewhat remarkable that the two species now brought together in happy union may be said to have long known each other. Both flowered for the first time in this country in the celebrated collection of the Rev. John Clowes, at Broughton Hall, near Manchester; Lycaste Skinneri in 1842, and Anguloa Clowesii in 1844.

Angulocaste Sanderæ has since passed into the collection of Dr. F. Bedford, who will shortly be removing his plants from Fulford, York, to his new residence near Maidstone, Kent. Among the rare species that have recently flowered in this collection is Mormodes badium, a native of Peru, and producing reddish-purple flowers.

ANGULOCASTE SANDERÆ (ANGULOA CLOWESII × LYCASTE SKINNERI ALBA).

Awarded First class Certificate, Royal Horticultural Society, February 28th, 1922, when exhibited by Messrs. Sand

CŒLOGYNE SANDERÆ.

THIS species is the prettiest known member of the group to which Lindley applied the name Proliferæ. He remarked: "All the species here collected agree in having a number of hard imbricated scales immediately below the flowers, and not at the foot of the scape. They often, perhaps always, produce a second scaly sheath beyond the first series of flowers, and out of that sheath arises a second series of flowers. C. barbata distinctly combines this group with the section Erectæ, through C. cristata." The flowers are white, with the exception of the disc of the lip which is deep orange in front, much paler behind, and with three parallel keels covered with long, dark brown hairs, which are more numerous and paler in colour towards the base of the lip. It is allied to C. barbata, Griff., and C. elata, Lind., but is readily distinguished by a variety of characters. C. barbata, whose flowers agree in size, has a much narrower front lobe to the lip, and both it and the side lobes are fringed with long, dark brown hairs, while there is no orange blotch on the disc. C. elata has flowers only half the size, but very similar in shape, the lip more finely denticulate, and the keels undulate and crenulate or denticulate, but not covered with long hairs. C. Sanderæ is a very elegant species, and the dark brown hairs on the orange disc form a charming contrast with the rest of the flower.

Cœlogyne Sanderæ was introduced from Upper Burmah, and sent to Europe by Messrs. Sanders' collector, Micholitz, who found it growing on the branches of low trees overhanging the rivers. It never occurs in large quantities like many other members of the genus. It flowered at St Albans for the first time in the summer of 1889. The many flowered inflorescences of snow-white blooms, with their delicate and charming yellow crests and dark brown hairy keels, are singularly pleasing. As many as fifteen flowers have been observed on a single spike in its native habitat. In cultivation however, rarely more than ten are produced. The raceme has a somewhat drooping nature, and the individual flowers measure from three to four inches across. A temperature of 60-65 degrees will prove suitable for its cultivation.

MASDEVALLIAS.—In Masdevallia we have a genus of plants as remarkable for the uniformity of their vegetation as for the diversity of form and colour displayed in their flowers. Striking as are the grotesque shapes assumed by the flowers of some of the species, perhaps still more so is the extraordinary brilliancy of the colours of others, while in strong contrast to these there are other species whose flowers are of so homely a hue as to fail altogether to attract the favour of the greater number of Orchid cultivators. —*Veitch's Manual of Orchidaceous Plants.*

AN AMATEUR'S EXPERIENCE.

By Josephine Walker.

WE have an added interest in our collection the last few weeks. Our enthusiastic fellow-amateur grower, Lieut.-General Sir Arthur C. F. Browne has very kindly bestowed on us many interesting plants which he has just imported from India. And, what is still more interesting, he has given his own views on the growing of the different species. Like ourselves, he has some ideas which differ considerably from our good friends the professionals. Having spent many years in India he evidently loves the plants, and has studied the conditions under which they grow in their native habitat. Consequently he cultivates them as nearly as possible to these conditions. I wonder how the plants of Vanda cœrulea he has kindly given us will appreciate our interpretation of conditions suitable to their well-being? During the few weeks they have been in the cradle in the lantern roof they have had samples of all the winds of the heavens, a light powdering of snow, and some days blazing sunshine full on them, and they are very near the glass. One morning last week I made a mistake and saturated them with water, thinking the sun was coming along; it did not, but a very cold night did! However, they seem happy up to the present, and are beginning to show green roots and fresh points at the ends. I should mention they are on flat blocks of wood, with just a covering of moss to bind them on. Most of the roots are clear and depend on the atmosphere for moisture. I wonder what is really the ideal place to grow this beautiful species. Mr. Mackay says in his excellent cultural article last month that he has just put his in the vinery, where they get sufficient moisture, shade, and ventilation until their spikes show in July. Our lot will certainly get plenty of the former and the latter, but no shade at all.

A beautiful plant of Vanda cœrulea I saw recently in a famous collection was growing in a Dendrobium house near the door. The head gardener told me he attributed its excellence to the fresh air it received every time the door was opened, so I think we agree that fresh air is essential to their well being. But what about shade? This species was, I believe, first discovered by Wm. Griffiths growing on the Khasia Hills of Assam, a locality of dry, grassy slopes, wind swept at an altitude of 4,000 feet, where the small trees were knarled and stunted, and almost leafless. And there, with their roots sprawling over the dry, rough bark, without moss and lichen, fully exposed to the rays of the sun, flourished the Vanda cœrulea, with spikes carrying as many as twenty-one flowers measuring up to four inches across. And in the winter there is hoar frost on the ground—that sounds spartan enough for any Orchid, so I shall be very interested to see what happens to our little family in the roof.

Though our plants of Cypripedium insigne Harefield Hall and C. insigne Sanderæ have grown strong and bloomed well this year without shade of any kind, we have decided, since repotting and breaking them up, to try them for a year at the end of a house that is shaded by a tree, along with the Cymbidiums. The reason for this is that we have a large pan of the ordinary Cypripedium insigne. I believe one of the first plants that my husband ever had—and which has always been shifted about into any odd position to make room for its more aristocratic brethren—last year it was pushed into an out-of-the-way corner near the door, in the shade, and it has grown magnificently; we have decided that what is good for one member of the family is good for others, so they have joined their less-favoured relation.

The "Monkey House" is now filling up splendidly. The Indian Dendrobiums are a grand lot. We have also some Aërides, Thunias, and a few Philippine Dendrobiums imported by us many years ago, but which failed to grow in the big house. When they were knocking at death's door we turned the lot over to a gardener friend, who nursed them back to health, and he has now kindly returned some of them to us. They include the glorious D. superbum, one of the finest Dendrobiums we have ever seen. They are very welcome additions, and will prolong the blooming period for us. We are trying some of the imported Dendrobiums on old fern stems, bound round wrth sphagnum moss. We have an idea that it may suit them better than pots, because the roots can be free, if they wish. All the repotting is finished, and the collection is in perfect condition to start the growing season. It is still necessary to sponge the leaves of the Lælias and Læliocattleyas every few weeks. I do not know where the soot comes from now. I can understand it in the summer time, when we were constantly syringing with rain-water, which here is full of soot. We also sponge the leaves of the Cypripediums and Cymbidiums. This constant sponging may account for the bloom and polish on all our foliage, which never fails to elicit the admiration of anyone who sees the plants, whether they know anything about Orchids or not.

I say to my husband that we must have a love of the plants to give them the constant care and attention all the time. I suppose the difficulty of the large collections to-day is to get this kind of labour. A gardener assured me a short time ago that the old race of gardeners, who really loved their plants, is dying out. I hope not. We were looking over a bulb farm this week, where bloom is forced for the market, and I said to the foreman who showed us round: "You must love the flowers," and he admitted that though there was plenty of work, it had become a hobby with him, and the result showed it.

ODONTOGLOSSUM CRISPUM THE CHALLENGER.

IT is now some eighty years since Odontoglossum crispum was discovered by Hartweg when travelling near Pacho, in the Republic of Colombia. Notwithstanding the many other species of the genus, and the multitude of hybrids raised in recent years, a fine pure crispum is as much admired and sought after as ever in its history. But during the long period of eighty

ODONTOGLOSSUM CRISPUM VAR. THE CHALLENGER.

years the descriptive term "fine" has been applied to many different forms. Not much imagination is required to picture some of the early types, with their narrow segments forming starry flowers, and amongst them a slightly larger or perhaps rounder flower described as fine. Then, at a later period, came the spotted varieties, ot which the best were similarly described,

followed by the blotched forms that realised sensational sums of money. And so at each period in the history of this species there have been varieties of outstanding merit. The flower that for a time enjoyed the reputation of being the finest was soon followed by another of even higher merit, and for years this advancement, at times perhaps slow, yet sure, has continued. Now the challenge is taken up by a truly fine variety recently flowered by Messrs. J. & A. McBean, who appropriately name it O. crispum The Challenger. Our illustration has been prepared from a painting by Miss M. Walters Anson, and shows one of the flowers exactly life-size. The snow-white segments are unusually broad, the petals almost meeting one another across the dorsal sepal. The central area of the labellum is yellow.

NEW HYBRIDS.

ORCHID.	PARENTAGE	RAISER.
Cymbidium Bullfinch	Garnet × Alexanderi	Sir Geo. Holford.
Cymbidium Curlew	Butterfly × Alexanderi	Sir Geo. Holford.
Cymbidium Petrel	Pauwelsii × Garnet	Sir Geo. Holford.
Cymbidium Pipit	Gottianum × Miranda	Sir Geo Holford.
Cymbidium Ring Dove	Dryad × Miranda	Sir Geo. Holford.
Cypripedium Bantive	Gaston Bultel × leyburnense	H. Green, Esq.
Cypripedium Cotswold	Blanche Moore × G. F. Moore	H. Green, Esq.
Cypripedium Odin	Antinous × Beeckmanii	A. Hanmer, Esq.
Odontioda Hanmeræ	Oda. Sanderæ × O. Jasper	A. Hanmer, Esq.
Odontioda Hertha	Oda Lambeauiana , Oda. Joan	Charlesworth.
Odontioda Janet	Oda. Wilsonii × Oda. Cooksoniæ ...	Charlesworth.
Odontioda Karoa	O. Louise × Oda. Joan	Charlesworth.
Odontioda Priscilla	Oda. Lambeauiana × O. Jasper	Charlesworth.
Odontioda Ramon.	O. crispo-Harryanum × Oda. Sanderæ ...	Charlesworth.
Odontioda Selene	O. Louise × Oda. Cooksoniæ	Charlesworth.
Odontioda Syniæ	Oda. Joan × O. Kilburneanum	Charlesworth.
Odontioda Thiasa	Oda. Brewii × O. Aglaon	Charlesworth.
Odontioda Valeria	O. Jasper × Oda. Cooksoniæ	Charlesworth.
Odontioda Viscount Faseelles ...	Oda. Madeline × O. Aglaon	S. Gratrix, Esq.
Odontoglossum Asta	O. Dreadnought × O. Jasper	A. Hanmer, Esq.
Odontoglossum Camden	O. Lambardeanum × O. regale	E. R. Ashton, Esq.
Odontoglossum Crœsus	O. harvengtense × O. Fascinator	Sanders.
Odontoglossum Iphis	O. harvengtense × O. Queen Alexandra ...	A. Hanmer, Esq.
Odontoglossum Ithone	O. Aglaon × O. Dusky Monarch	Charlesworth.
Odontoglossum Melpomene	O. Aglaon × O. Prince Albert	Charlesworth.
Odontoglossum Mosaic	O. formosum × O. ardentissimum ...	Sanders.
Odontoglossum rubescens	O. Rossii × O. majesticum	P. Smith, Esq.
Odontoglossum Senlac	O. Jasper × O. Lambeauianum	Charlesworth.
Odontoglossum Tagus	O. Othello × O. Doris	Charlesworth.
Odontonia Pierre Chollet	Odna. brugensis × M. vexillaria	Sanders.
Oncidioda Miget	On. anthrocrene × C. Noezliana	Sanders.
Potinara Juliettæ	Slc. Marathon × Bc. Ena	Charlesworth.
Sophrocattleya Eleanor	C. Fabia × S. grandiflora	Sir J. Colman.
Sophrolæliocattleya bletchleyensis ...	C. Fabia × Sl. Marriottiana	Sir H. S. Leon.
Sophrolæliocattleya Phyllis	C. Tityus × S. grandiflora	Flory & Black.
Sophrolæliocattleya Una	Lc. Geo. Woodhams × Slc. Nestor ...	Stuart Low.

CORRECTION.—The parentage of Odontioda Orthia (p. 54) should read O. Louise × Oda. Royal Gem.

THE AMATEUR'S PAGE.

A NOTE from an amateur concerning the staging in his Cypripedium house brings out the fact that insufficient consideration is given to this important matter. A solid structure of thick boards or immense slabs of slate may do very well so far as a potting bench is concerned, but too often the cultivation of Cypripediums is attempted on somewhat similar contrivances. The results, although perhaps pleasing to the young amateur, are by no means as satisfactory as they might be. Cypripediums are terrestrial in habit, it is true, but this term does not imply that they always grow in soil on the ground level like the majority of garden plants. In their native home they are frequently found growing on elevated rocks, and in the forks of large trees where a quantity of soil in the way of decayed vegetable matter has accumulated.

Many Cypripediums have shown much improvement when removed from a solid staging to one composed of laths and admitting a free circulation of air. The narrower the laths the better, and the pots should be so placed that the drainage hole in the bottom is left quite free, so that the air may obtain access to the interior, with a consequent beneficial effect to the roots. A moist atmosphere is at all times necessary, and is best maintained by placing sheets of corrugated iron, or tiles, a few inches above the hot-water pipes, and covering them with broken coke or other moisture holding material. Many of the best constructed Orchid houses are fitted with double staging, the lower one solid and covered with sand or broken coke, the upper one made of narrow laths and placed about a foot above it.

Another method, and one that generally gives excellent results, is to stand each plant upon an inverted pot, or even two, so that it is well elevated above the solid staging. When the pots are arranged methodically in lines it is an easy matter to syringe in between them. A considerable quantity of water is absorbed by these additional pots, and is subsequently given off into the atmosphere, thus maintaining it in a moist condition. It is not always necessary to stand a pot upon another one of similar shape or size, for it may then be elevated above the height of the surrounding plants and look unsightly; three small pots placed in triangular formation will allow the drainage hole of the pot containing the plant to remain uncovered, which is an item worthy of consideration. A word of caution may be given regarding the space above the plants, and beneath the glass roof. This should always be sufficient to prevent the foliage of the plants being scorched, for even when adequate shading is provided the space just beneath the glass is frequently too hot and dry for the satisfactory cultivation of Cypripediums. More than one cultivator lowers the staging at the commencement of summer, and raises it again when the autumn arrives.

CULTURAL NOTES.

BY J. MACKAY, ORCHID GROWER TO JAMES J. JOICEY, ESQ., THE HILL, WITLEY, SURREY.

WE are now entering the busiest time, for with the gradually lengthening days and increased spells of sunshine root action and growth will commence in earnest. Conditions in the various houses can be given which will promote free and rapid growth; as the conditions outside become favourable the temperature can be raised five or ten degrees all round. Give air whenever possible in the various houses, if only for a short time, so that the atmosphere may be changed to prevent stagnancy with the extra moisture which will be required. Maintain a free growing atmosphere by damping down several times daily, especially during bright spells, and watch the shading of plants carefully, as the foliage will soon get scalded during the early spring months. Repotting should be done where necessary, and as Orchids cannot be potted so quickly as other plants it is essential that they should be done carefully and well.

Many plants of Odontoglossum, Cattleya, and Læliocattleya hybrids will be pushing flower spikes, and these should be carefully watched and protected from the ravages of slugs, and in other cases by thrip. The latter pest may be kept in check by fumigation at intervals of a fortnight. Spikes of Odontoglossum may be protected by cotton wool and secured to neat sticks, so that they may have all the light possible.

In the warm house a good many plants will need attention in the way of fresh rooting material, and where plants of Phalænopsis are grown these should now have attention, without disturbing the roots, if possible. They grow well in pans suspended, or on the stage, in Polypodium fibre surfaced with fresh sphagnum moss. A good position for them is one natually inclined to be shady and moist; the stage beneath them should have some retentive material so that the surroundings may be kept moist during the growing season. Give the plants water whenever the moss shows signs of dryness. Plants of the Cypripedium bellatulum, niveum, and Godefroyæ section will be finishing growth, and soon throwing flower spikes. When grown well they are delightful plants. Small pots or pans are best to grow them in as they resent too much material about the roots. A small quantity of good fibrous loam intermixed with broken limestone suits them well. These plants will thrive and grow nearly on atmospheric moisture, and should be watered sparingly; this should be done by dipping the plants to the pot rim, guarding against any water lodging in the young growths and axils of the leaves, or they will almost certainly damp off.

DENDROBIUMS.—Plants of D. thyrsiflorum, and Farmeri, which have been rested quietly in the intermediate house are showing signs of flowering

at the various nodes; little water will be required as yet, sufficient only to keep the pseudobulbs plump and firm. After flowering, any repotting required may be done, as soon as new growth commences, in a mixture of osmunda fibre and sphagnum moss. D. Dalhousieanum is best grown in the warm house, as also D. fimbriatum and D. clavatum: these also are showing their flower spikes, and providing the pseudobulbs do not show signs of shrivelling, little water will be required until new growth commences. D. Phalænopsis, D. bigibbum, and D. superbiens are very useful decorative Orchids; they have had a good season of rest since flowering in the autumn and are showing signs of new growth. Attention to repotting may now be done, previous to placing them in the growing quarters. Osmunda fibre and sphagnum, broken crocks, and a sprinkling of coarse silver sand will be found suitable. Use pans in preference to pots, and suspend them from the roof of a warm house. They grow freely enough in a close moist atmosphere, and make larger bulbs and leaves than those seen on imported plants, yet under such growing conditions they lack the solidity in texture indispensable to the free formation and development of flowers. The cause of their non-flowering is not through excess of heat, but to an over-humid atmosphere, with insufficient light and air, which enfeebles them. Give them a position in the warm house with less atmospheric moisture, more air, and still more light during the growing season, with comparatively dry quarters when at rest. This will be more in keeping with their requirements.

CŒLOGYNE TOMENTOSA, DAYANA, AND MASSANGEANA are commencing to grow, and will soon emit flower spikes from the young growth. Their long pendulous racemes are shown to better advantage when grown in baskets suspended. After flowering, they may be given fresh material to root in, and, if they have outgrown their receptacles, may be divided and placed in other baskets. C. pandurata and burfordensis are two other beautiful Cœlogynes, and are much admired in flower at a later date.

ONCIDIUMS.—The autumn section, including varicosum, tigrinum, cheirophorum and ornithorynchum will soon need attention if repotting is required. A suitable compost consists of osmunda fibre, beech leaves, and sphagnum moss, with a fair proportion of crushed crocks intermixed to keep it open and porous. They will grow well at the warmest end of the cool house, and require less shading than the Odontoglossums. Oncidium macranthum, lamelligerum, and superbiens are other species which can be grown in this house; they are now showing flower spikes in a more or less advanced condition. O. concolor is another bright yellow species showing its spikes. It succeeds well if grown in pans suspended in the cool house during the summer months, giving slightly more warmth during the colder months. O. Papilio, Krameri, and bicallosum are best grown in the warmest house, and when in flower rarely fail to attract attention.

ANGULOA CLOWESII, RUCKERI, CLIFTONI, AND EBURNEA are commencing to grow, and may be repotted previous to flowering, which comes with the new growth, or left until they have done blooming. They are all strong growing and free rooting plants, and require an open mixture to root in. The pots should be about half filled with crocks, using a compost of two parts osmunda fibre and one of good fibrous loam, with a sprinkling of crushed crocks and sphagnum moss. Water sparingly until growth becomes vigorous, when copious supplies may be given until growth and bulbs are matured, after which gradually reduce the supply and give sufficient only to maintain the bulbs in good condition.

TRICHOPILIA SUAVIS, TORTILIS, AND GALLEOTTIANA are sweet-scented Orchids, and grow well along with Lycaste Skinneri in the intermediate house. The former is producing its flower spikes, and may be repotted when growth recommences. Disa grandiflora and the various hybrids are now growing rapidly: they should be kept well up to the light in the coolest house, but protected from the sun's direct rays; give frequent daily sprayings, and examine the growths for thrip, which soon disfigures the foliage and flower spikes.

CATTLEYA CITRINA has now completed its growth, and flower spikes are showing from the apex of the bulbs; keep them suspended well up to the light in the Cattleya house, and give slightly increased supplies of water as the spikes advance in growth.

HARRY A. BARNARD.—We regret to record the death on March 14th of Mr. Harry A. Barnard, who commenced his career with the Lows of Clapton more than sixty years ago. He was widely known in horticultural circles, and possessed a keen memory of early-day Orchid history. An interesting note from his pen on Lælia anceps Dawsonii and Odontoglossum Andersonianum appeared on page 66 of our last issue. He had a wide knowledge of plants, and his genial disposition will be much missed in England as well as in the United States and Canada. The interment took place at Abney Park Cemetery on the 18th, and among those present were Mr. Stuart H. Low, Mr. Hugh Low, and several of his old comrades.

CYPRIPEDIUM ARGUS.—This species flowered for the first time in Europe in 1873, when plants that had been imported the previous year flowered with Messrs. Veitch at Chelsea. It is a native of the Philippines, having been discovered by Gustav Wallis in 1872. The foliage is tesselated, while the warty eye-like spots on the petals form one of its most striking characteristics, and indeed suggested its name, for the Argus of Greek mythology was a monster surnamed Panoptis, "the All-seeing," because he had a hundred eyes.

ROYAL HORTICULTURAL SOCIETY.

February 28th, 1922.

MEMBERS of the Committee present: F. J. Hanbury, Esq. (in the Chair), Messrs. J. O'Brien (hon. sec.), S. W. Flory, F. K. Sander, J. Cypher, H. T. Pitt, T. Armstrong, A. McBean, Gurney Wilson, E. R. Ashton, J. Wilson Potter, R. Brooman White, H. G. Alexander, C. H. Curtis and W. H. Hatcher.

FIRST-CLASS CERTIFICATES.

Potinara Juliettæ (Slc. Marathon × Bc. Ena) from Messrs. Charlesworth & Co. A remarkable hybrid containing the four genera Sophronitis, Lælia, Cattleya and Brassavola, and named in honour of Mons. Potin, President of the Horticultural Society of France. The spike carried two flowers, of an exceedingly rich rose-crimson colour, with a purple over tint, the labellum velvety crimson, and with lines of old gold colour in the throat.

Cymbidium Thrush (Holfordianum × Schlegelii), from Lieut.-Col. Sir George Holford, K.C.V.O. A charming hybrid of cream colour, the lip slightly spotted with crimson, and the crest yellow. The spike carried 14 flowers.

Cymbidium Miranda Bronze Beauty (Alexanderi × Lowio-grandiflorum), from Lieut.-Col. Sir George Holford. The spike carried 13 large flowers of bright bronze colour, the labellum marked with red.

Cattleya Tityus var. Wedding Bells (Enid × Octave Doin), from Messrs. Sanders. This elegant plant carried two very large flowers of rose-colour, the expansive labellum rose-crimson, and with the throat yellowish.

Angulocaste Sanderæ (L. Skinneri alba × A. Clowesii), from Messrs. Sanders. A very handsome hybrid, the robust plant carrying six large flowers of pale lemon-yellow colour.

Cymbidium Redstart var. Bright Eyes (Dryad × Pauwelsii), from Lieut.-Col. Sir George Holford. The spike carried 12 rose-coloured flowers, the lip lighter and streaked with crimson.

AWARDS OF MERIT.

Cymbidium Redstart (Dryad × Pauwelsii), from Lieut.-Col. Sir George Holford. A pretty result, the cream coloured flower being tinted with rose, and spotted with crimson on the lip.

Cymbidium Miranda (Alexanderi × Lowio-grandiflorum), from Lieut.-Col. Sir George Holford. A grand variety of large size, of bright bronze-buff colour, with crimson apex to lip. The spike carried 17 flowers.

Cymbidium Curlew var. Rosy Gem (Butterfly × Alexanderi), from Lieut.-Col. Sir George Holford. A remarkably distinct result in which the cream-coloured flower had the labellum suffused with rich rose-crimson.

Sophrolæliocattleya Mars (Slc. Marathon × C. Clotho), from Messrs.

Armstrong & Brown. A pretty hybrid, in which the spike carried three attractive flowers of deep rose-purple colour.

Odontioda Venus (O. Aglaon × Oda. Coronation), from Messrs. Armstrong & Brown. The fully-developed spike carried 14 flowers handsomely blotched with crimson rose.

Odontioda Cissie (Oda. Lambeauiana × O. King Arthur), from Messrs. J. & A. McBean. All the segments of this novelty were of excellent formation and rich claret-red colour.

Cymbidium Kittiwake (Dryad × Gottianum), from Lieut.-Col. Sir George Holford. A charming hybrid bearing seven white flowers, the lip streaked with crimson-purple.

Odontioda Latona var. lilacina, from Messrs. Stuart Low & Co. A beautiful variety of rich rose-crimson tints, with the crest yellow. The spike bore 14 flowers.

Cymbidium Butterfly (insigne × Lowio-grandiflorum), from Lieut-.Col. Sir George Holford. A vigorous plant carrying two fine spikes with a total of about 45 elegant flowers.

Brassolæliocattleya Camada (Lc. Artemis × Bc. Mrs. J. Leemann), from Messrs. Charlesworth & Co. This plant carried two large flowers of bright golden-yellow colour, the expansive labellum fringed at the margin.

GROUPS.

Lieut.-Col. Sir George Holford, K.C.V.O., Westonbirt (gr. Mr. H. G. Alexander) was awarded a Gold Medal for a magnificent group of Cymbidiums occupying 250 square feet. All the plants were splendid examples of cultivation, a Silver-gilt Lindley Medal being also awarded on this account. Among the varieties were Alexanderi, President Wilson, Butterfly and Miranda, each carrying many-flowered spikes, while the novelties included Bullfinch, Curlew, Petrel, Pipit and Ring Dove, the parentage of which is given under "New Hybrids."

Messrs. Sanders received a Silver Flora Medal for an interesting exhibit containing fine examples of Phalænopsis Schilleriana, the scarce Dendrobium atroviolaceum and Sarcochilus Fitzgeraldii, Oncidium splendidum holoxanthum, with flowers entirely yellow, the handsome Angulocaste Sanderæ, Spiranthes gracilis, with several erect spikes, the attractive Oncidium Cavendishianum aurem, Dendrobium Cœlogyne, several elegant Cymbidium hybrids and fine Cattleyas.

Messrs. J. and A. McBean, were awarded a Silver Flora Medal for a fine group in which were Brassocattleya Cissie, orange-yellow, Bc. Minerva, Læliocattleya Linda, cerise-colour and very pretty, several good varieties of the pure white Lc. Eunice alba, a fine selection of Odontoglossums, including Ramses, with a many-flowered spike, and in the centre a specimen plant of

Oncidium McBeanianum. Mention may also be made of a choice selection of Cymbidium hybrids.

Messrs. Stuart Low & Co. obtained a Silver Flora Medal for an attractive exhibit containing several well-flowered Dendrobiums, Lycaste Skinneri, both white and coloured forms, the rare Helcia sanguinolenta, Odontoglossum bictoniense, with a strong spike, Cattleya Trianæ The Baron, Lc. luminosa aurea, the elegant Lælia anceps Dawsonii, Lc. Bella alba, with large white flowers, Cattleya Monarch, a noble flower, and the pretty Cirrhopetalum picturatum.

Messrs. Charlesworth & Co. received a Silver Flora Medal for a group of fine hybrids including Odontonia Magali Sander, with a spike of over 70 flowers, Phaius Marthiæ, with an erect spike of 15 flowers, Lycaste Skinneri alba, the new Odontonia Ceres, a selection of Brassocattleyas, the handsome Neomorrea irrorata, Dendrobium Bancroftianum, several choice Odontoglossums, Cattleya Enid alba, and numerous Læliocattleyas.

Messrs. Flory & Black received a Silver Banksian Medal for a neat group containing the elegant Cypripedium Hypericum, the pure white Cattleya Snowdrop, Sophrocatttleya Perseus, very pretty, and Cattleya The Bride. Læliocattleya H. T. Pitt carried a spike of four fine flowers, and there were several elegant Brassocattleyas, and a fine variety of Slc. Ruth.

Messrs. Armstrong & Brown staged Odontioda Venus, with a 14 flowered spike, Odontoglossum The Prince, white ground with neat blotching, The Orchidhurst variety of Lc. Schröderæ, carrying three immense flowers with cream-white sepals and petals, and Rolfeara Sunrise, with three pretty flowers of cerise colour.

R. O. Thwaites, Esq., Streatham Hill, exhibited a selection of the pure white Cattleya Oenone alba (labiata alba × Mossiae Wagneri), C. Snowdrop, also white, and Odontoglossum Meredithiæ (Rossii × venustulum), boldly blotched, the rose lip having a bright yellow crest.

Pantia Ralli, Esq., Ashtead Park, Surrey, exhibited Cattleya Gravesiana alba The Bride, a pure white hybrid between C. Lueddemanniana alba and Mossiæ alba.

March 14th, 1922.

Members of Committee present :—Fred. J. Hanbury, Esq. (in the chair), Prince Tadashige Shimadzu, Messrs. J. O'Brien (hon. sec.), Stuart Low, J. Wilson Potter, A. McBean, A. J. Kaye, H. T. Pitt, T. Armstrong, J. E. Shill, C. H. Curtis, A Dye, S. W. Flory, C. J. Lucas, R. Brooman White, H. G. Alexander and Gurney Wilson.

FIRST-CLASS CERTIFICATES.

Sophrolæliocattleya Falcon Westonbirt var. (Lc. Aureole × S. grandiflora), from Lieut.-Col. Sir George Holford, K.C.V.O. A large plant carrying three spikes with a total of 10 flowers, of perfect formation and

intense crimson-scarlet colour. One of the brightest and most richly coloured of Sophronitis hybrids.

Cymbidium Alexanderi Westonbirt var. (eburneo-Lowianum × insigne Sanderi), from Lieut.-Col. Sir George Holford, K.C.V.O. The largest and finest variety so far raised. The robust plant bore a couple of spikes with an aggregate of 12 ivory white flowers, the lip mottled with mauve.

Odontioda Opal (Odm. eximillus × Oda. Cooksoniæ), from Messrs. Armstrong & Brown. A bright and attractive hybrid with a spike of seven neatly-formed flowers, the broad segments handsomely blotched with reddish-scarlet on a rose-tinted ground.

AWARDS OF MERIT.

Cymbidium Alexanderi var. Rosalind, from Lieut.-Col. Sir George Holford, K.C.V.O. A charming variety in which the cream-coloured flowers are suffused with rose-pink, the lip margined with rose, and the column similarly coloured.

Sophrocattleya Prince Shimadzu (Sc. Doris, Cobb's var. × C. King George), from Messrs. Flory & Black. A richly coloured hybrid, the sepals brownish-red, the broad petals plum coloured and tinted with crimson, the labellum bright yellow margined with crimson-purple.

GROUPS.

Messrs. Sanders were awarded a Silver Flora Medal for an extensive exhibit containing fine plants of Cymbidium Titania, C. Martin, the pretty C. Redstart, and C. Yellow Hammer. Among the Dendrobiums were D. superbum Rœbelini, D. Apollo grandiflorum, and the new D. variabilis (nobile nobilius × Thwaitesiæ Veitch's var). White Cattleyas were represented by C. Capella and C. Evelyn Sander, and there were several fine Brassocattleyas, Cypripediums and interesting Masdevallias.

Messrs. Stuart Low & Co. received a Silver Flora Medal for an attractive group in which were well-grown plants of Phalænopsis Schilleriana, distinct varieties of Lycaste Skinneri, the pretty Cattleya Gravesiana alba, a selection of Sophrocattleyas, many richly coloured, some excellent Dendrobiums, including a large plant of D. Wardianum and a grand specimen of D. nobile with over 500 flowers.

Messrs. Charlesworth & Co. were awarded a Silver Flora Medal for an exhibit of choice hybrids, among them being the interesting Charlesworthiara Alpha, the scarce Zygocolax Charlesworthii, the elegant Phaius Marthiæ and P. Norman, several fine Odontoglossums, some richly coloured Læliocattleyas and a selection of Brassocattleyas. Among the species were Miltonia flavascens and Habenaria rhodocheila. A fine variety of Cattleya Cowaniæ alba bore four large blooms.

Sir Jeremiah Colman, Bart., Gatton Park, Surrey (gr. Mr. J. Collier),

was awarded a Silver Flora Medal for an exhibit of 36 distinct varieties of Lycaste Skinneri, including the hybrids L. Tunstillii, L. Luciani and L. Balliæ. This exhibit group proved very attractive, for fine varieties of this well-known species are now very scarce. All the plants are well cultivated and some carried as many as eleven finely-developed flowers.

H. T. Pitt, Esq., Stamford Hill (gr. Mr. F. W. Thurgood), received a Silver Floral Medal for a very interesting group of rare species and pretty hybrids. Among the former were Cirrhopetalum Mastersianum, the pretty Cœlogyne Sanderæ, Eulophia virescens, with an erect spike of 32 greenish flowers, Oncidium Papilio, and Spiranthes gracilis. Epidendrum Endresio-Wallisii and Dendrobium Curtisii, both rare hybrids, were also included.

Messrs. Flory & Black were awarded a Silver Banksian Medal for a neat exhibit containing several novelties. Potinara Gratrixiæ (Sl. Gratrixiæ × Bc. Mrs. J. Leemann), had flowers of crimson pink colour, Slc. Prince of Orange (Slc. Eros × Lc. Thyone), orange-buff, and Lc. Apricosa, apricot colour. Other interesttng hybrids were Sc. Clarinda (Sc. Atreus × C. Empress Frederick), the golden-yellow Dendrobium Thwaitesiæ, the white Cattleya Gravesiana alba, and Slc. His Majesty.

Messrs. J. & A. McBean received a Silver Banksian Medal for a selection of their choice hybrids. There were four grand plants of Lc. Eunice alba (C. chocœnsis × L. anceps), with pure-white flowers, two fine varieties of Cattleya Cowaniæ alba, and Cattleya Trianæ var. F. McBean. Odontioda Joan had flowers of blackish chocolate colour, and among the fine Odontoglossums were O. Robina, with claret-crimson markings, and O. promerens.

R. G. Thwaites, Esq., Streatham Hill, exhibited Odontioda Atalanta var. Pamela, with a spike of seven brownish-crimson flowers.

D. Barnard, Esq., Leighton Dene, Watford, exhibited Bc. Mirabilis Leighton Dene var., a bold flower of large size and having light rose tinted sepals and petals, the expansive lip greenish-yellow and deeply fringed.

MANCHESTER ORCHID SOCIETY.

March 2nd, 1922.

MEMBERS of the Committee present:—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, B. J. Beckton, J. Birchenall, A. Burns, A. Coningsby, D. A. Cowan, J. C. Cowan, J. Cypher, J. Evans, J. Howes, A. Keeling, D. McLeod, E. W. Thompson, J. Thrower and H. Arthur.

A Gold Medal was awarded to S. Gratrix, Esq., for a splendid exhibit of choice Cattleyas and Cypripediums, as well as a selection of fine Lycastes and Dendrobiums. A Large Silver Medal was granted to Mrs. Bruce and Miss Wrigley for an attractive group of Lycastes of the Skinneri section, and a number of home-raised Cypripedium seedlings. A Silver

Medal was awarded to the Rev. J. Crombleholme for an exhibit of Cymbidiums, including many distinct varieties.

A Gold Medal was awarded to Messrs. Hassall & Co. for a fine group of Cattleyas in great variety, and several choice Odontoglossums. A Silver Medal was granted to Messrs. J. Cypher & Sons for a group of hybrids and distinct varieties of several species.

FIRST-CLASS CERTIFICATES.

Cattleya Douai var. Our Princess, a fine pure-white flower of grand shape: Bc. Queen of England (C. Germania × Bc. Mdm. Chas. Maron), an immense flower, sepals and petals light rose, lip deep magenta; from Mrs. Gratrix.

Slc. Samuel Gratrix, fine flower, sepals and petals deep purple crimson, lip intense purple: Cattleya Linda var. Radiance, broad sepals and petals, lip deep purple; from S. Gratrix, Esq.

Cypripedium Idina, Beckton's var., a large flower of the C. insigne Harefield Hall type, grand shape and colour; from B. J. Beckton, Esq.

Cattleya Tityus var. Evansiæ, an immense flower of grand shape and with mauve sepals and petals, lip large, dark purple, and with yellow side lobes; a Silver Medal was also awarded to this plant: Odontioda Madeline var. Evansiæ, large flower of brilliant colour; from Mr. J. Evans.

Brassocattleya Penelope var. Rubra, an immense flower, sepals and petals dark mauve, lip rich magenta, side lobes yellow; from Messrs. Mansell & Hatcher.

AWARDS OF MERIT.

Lycaste Skinneri var. Symmetry, L. Skinneri var. Apple Blossom, and L. Skinneri var. Purple Emperor; from Mrs. Bruce and Miss Wrigley.

Sc. Saxa, West Point var., Lycaste Skinneri var. Lady Patricia Ramsey, and Dendrobium nobile rotundum; from S. Gratrix, Esq.

Cymbidium Dryad var. Silvarum, and C. Castor var. Primo; from the Rev. J. Crombleholme.

Cattleya Trianæ var. Dreadnought, and Odontoglossum aspersum Hartley's var.; from Dr. Hartley.

Cypripedium Victor Hugo var. Little Gem; from B. J. Beckton, Esq.

Cypripedium Nirvana; from Capt. W. Horridge.

Odontioda Wilsonii var. Sunbeam; from P. Smith, Esq.

AWARDS OF APPRECIATION—FIRST-CLASS.

Odontoglossum harvengtense var. Orion; from Mrs. Gratrix.

Cypripedium Ionian (Troilus × mirum); from S. Gratrix, Esq.

Odontoglossum Rosamund (Rosalind × harvengtense); from Messrs. Mansell & Hatcher.

CULTURAL CERTIFICATE.

Mr. J. Howes, for Bc. Oberon, Sanders' var., and Lycaste Skinneri var. Mrs. G. Hamilton Smith.

THE ORCHID REVIEW.

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NOTES.

BRITISH ORCHIDS.—Mr. C. B. Tahourdin, of Baynards, Wallington, Surrey, has compiled "Some Notes as to British Orchids," an 8-page pamphlet containing notes of his own searches, press imformation, and correspondence, and intended solely for private circulation amongst those whom he knows to be interested in British Orchids.

DR. J. TROYANOWSKY.—Many of our readers will be interested to learn that after a lapse of six years we have received a letter from Dr. J. Troyanowsky, President of the Moscow Orchid Society, and the author, in 1913, of an important work on the cultivation of Orchids in Russia. The doctor describes the sad and terrible times, and records the loss of his wife through cold and severe privations. But to our great surprise he adds the welcome information that about one-third of his Orchids are still alive.

HORTICULTURAL SOCIETY OF FRANCE.—The President of the Société Nationale d'Horticulture de France is Monsieur Viger, and Monsieur Chatenay is the Premier Vice-President. There are six other Vice-Presidents, one of whom is Monsieur Julien Potin, who also has the honour of being President of the Orchid Committee. In our note on the new genus Potinara, page 110 of our last issue, we inadvertently referred to Monsieur Potin as the President of the above Society.

NEW ORCHIDS.—The issue of parts 19-30 of *Repertorium specierum novarum*, by Dr. Friedrich Fedde, completes the 17th volume (1921) of this useful work. During the past year Decades LXVIII-LXXIII of "Orchidaceæ novæ et criticæ," by Dr. Rud. Schlechter, have been published. Among the novelties is the new genus Endresiella. Contributions by Dr. Fr. Kränzlin comprise "Orchidaceæ Tenianæ Yunnanenses, Orchidaceæ novæ, and Masdevalliæ novæ," the latter containing descriptions of 44 new species, three of which belong to the section Scaphosepalum and two to Cryptophoranthus.

CATTLEYA CITRINA.—But few Cattleyas are as difficult to cultivate successfully for any length of time as C. citrina, hence congratulations are due to Mr. E. R. Ashton, of Broadlands, Tunbridge Wells, who has just flowered once again a plant of this charming Mexican species which has been in his collection since 1898. Among the first to mention this plant was the Jesuit Hermandez, who wrote on Mexican plants in the seventeenth century. One cannot now say whether he anticipated any difficulties regarding its cultivation, but we do know that he applied to it the name Corticoatzontecoxochitl, which if adopted would alone cause amateurs to keep the plant at a safe distance. It was first introduced into England by the Horticultural Society of London about the year 1823. This Society possessed but a single plant, which appears to have lived only a short time. Some fifteen years later it was introduced from Oaxaca to the Duke of Bedford's collection at Woburn. This species was a great favourite with the late Mr. J. Gurney Fowler, who, on more than one occasion, exhibited fine plants at the Royal Horticultural Society.

DIPODIUM PUNCTATUM.—Dr. R. S. Rogers, of Adelaide, South Australia, sends a large coloured photograph showing three fine spikes of Dipodium punctatum, an Australian species known as the Wild Hyacinth Orchid. The spikes produce about twenty flowers, which open at Christmas time. Regarding the pollination of this species, Dr. Rogers remarks (*Trans. Roy. Soc., S. Australia, xxxvii.*, 48):—"A wedge-shaped space containing the stigma is enclosed between the bevelled portion of the column and the labellum. Facilities are afforded a visiting insect to enter this space—a good landing place, an easy footing until it is reached. The presence of the insect is, however, strictly limited to this part of the flower, where its operations will be useful. It cannot proceed further down the column, because of the close contact of the latter with the labellum and the presence of the hairy pad. It is prevented from straying to the sides by the lateral lobes of the labellum. On entering it will not remove the pollinarium, because it does not press against the sticky surface of the disc. It is only on retiring (and this process is made a trifle difficult owing to the direction of the hairs) that it will come in contact with the adhesive part of the disc, which it will then carry away in a position vertical to its own body. But when the pollinia perform the 'act of depression,' the pollinarium becomes horizontal or almost so. When the next flower is visited the pollen masses are deposited in their respected cups in the stigmatic cavity, and the visitor departs bearing with it the disc and the stipites. I do not know what the actual fertilizing agent is in the case of Dipodium, but judging by the size of the landing place and the strength of the labellum, it is probably an insect of fair size."

IMPORTING ORCHIDS FROM ENGLAND TO AUSTRALIA.

BY ARTHUR YATES, SYDNEY, N.S.W.

THE following notes of my experience during the past season, as well as previous years, in importing Orchids from England may be of interest to others similarly situated at a distance from the chief source of supply.

Most varieties of Orchids travel safely so long as they are shipped when in the right state of growth, are properly prepared before being packed, and if, on arrival, they are very gradually accustomed to normal conditions. Unfortunately the English trade-grower does not always realise the tremendous strain on a plant deprived of light, moisture, and air for a period of six or eight weeks, and he sometimes supplies young seedling plants too small to stand the journey, or he sends plants with new growths too far advanced to carry safely. My experience goes to show that if new growths are just showing when the plants are packed, they carry quite well, and continue to grow on arrival.

I have lately landed two consignments of Cymbidiums. They were all sturdy vigorous plants when packed. In the one case the new growths were well advanced, with several leaves up to twelve inches long; most of these new growths perished in transit. In the other case, the new growths were just showing, and although some of them had bleached shoots up to three inches long on arrival, they all survived the journey and continued as vigorous growths. In both instances most of the old leaves died in transit but this would not be a serious matter if the leads were saved, as Cymbidiums do particularly well in the open air in Sydney. Nearly all these plants will recover, but the damage sustained were the leads are gone will probably take them an extra year to reach the flowering stage.

On unpacking newly-imported plants, I place them in a cool, shady, well-ventilated greenhouse with a humid atmosphere, and carefully shade them with newspapers from any direct rays of the sun. No water is given for three or four days, and then only a light spraying. But after about a week or ten days I give them a more liberal supply, keeping them on the dry side till the bulbs become plump and the plants show signs of growth and root action. Under this treatment the plants, although they at first drop a few leaves, soon recover their normal condition. The leaves, before dropping turn yellow at the points. I find that in a few instances a portion of the leaf can be saved by cutting it across well below the yellow stain and dressing the cut with air-slaked lime. However, when a leaf commences to decay it is usually difficult to stop it.

A more serious form of decay is that of the main root stem at the base of the pseudobulbs; this turns black, commencing at the back and gradually spreading towards the lead and up the pseudobulbs. The only remedy is a

vigorous use of the knife, cutting all the decayed stem away till living green tissue is reached. In this way one, two or three of the leading pseudobulbs may be saved from a plant which is practically dying. After taking all these precautions, I usually lose from five to ten per cent. of the plants shipped. If the loss is greater, then in my opinion the sender is at fault. I refer to the hardier genera of Orchids, such as Cattleyas, Lælias and their hybrids, Dendrobiums, Cymbidiums, and the like. Miltonias I find most difficult subjects, a few recently imported all died in transit. I know of no more exciting occupation than unpacking a case of newly imported Orchids from England.

MASDEVALLIA BELLA.—A curious species allied to, and much resembling, M. Chimaera, but easily distinguished from it by its large shell-like labellum. It was discovered in Colombia by Gustav Wallis when collecting for Messrs. Veitch in 1873-4, but he failed to send home living plants. Four years later it was introduced by Messrs. Low & Co.

ONCIDIUM INCURVUM.—This well-known plant was originally introduced from Mexico by George Barker, of Birmingham, in whose collection at Springfield it flowered for the first time in England in 1840. It was collected by Ross in the province of Oaxaca, and subsequently by Galeotti at Talea in the same province, at an elevation of 4-5,000 feet. The specific name was given by Mr. Barker in reference to the tendency of the petals to curve inwards when the flowers first open, the colour of which is rather unusual in the genus.

REICHENBACH'S PROPHECY.—After describing in detail Cypripedium Crossianum, a new hybrid then flowering for the first time, H. G. Reichenbach made the following observation in the *Gardeners' Chronicle* for 1873, "While speaking of hybrid Cypripediums, I would remark that I saw last autumn in the nursery of Messrs. Veitch some varieties of C. Harrisianum, which are quite wonders of beauty from the great profusion of their blackish varnished flowers. What we want in Orchids is great variety. The addition of such a peculiar form is no doubt very agreeable. I would once more declare that the raising of such hybrids, whose origin is candidly and clearly stated, must, by-and-by, assist us very much in improving our views about species. We shall then see clearer. Then will come the grand time, when nearly all species will be known, and botanists will be able to judge with higher precision about the genera, at least of vascular plants. The next generation of botanists will have, indeed, very much to look at, but their satisfaction in science will be, no doubt, much greater than that we enjoy.

CYMBIDIUM HUTTONII.

THIS very distinct species was originally introduced from Java by Henry Hutton when collecting for Messrs. Veitch & Sons, in whose establishment it flowered in June, 1867. It has oblong, somewhat compressed pseudobulbs, bearing two, sometimes three, leaves at the apex, and

CYMBIDIUM HUTTONII.

a pendulous raceme of about ten large fleshy flowers, which turn up in a suberect position from the point of their attachment to the rachis. They are about an inch and three-quarters long, rather broad, and densely dotted all over with dark, dusky brown, on a light yellow ground, the spots becoming more purple and almost suffused towards the apex of the petals

and lip. C. Huttonii is also a native of Sumatra, where it was found by Curtis. Micholitz also found it in Central Sumatra when collecting for Messrs. Sanders. In its broad leaves and general appearance it is most allied to C. Devonianum.

Sir Joseph Hooker, in describing this plant, remarked that it does not much resemble a Cymbidium. Subsequent failures in attempting to hybridise it with other members of the genus support this statement. A fine example of C. Huttonii is figured in the *Orchid World*, vol. v., p. 222, from a well-cultivated plant in the collection of Geo. Hamilton-Smith, Esq., Leigh Woods, Bristol. This plant, one of about twenty imported in August, 1913, had been grown by Mr. A. Coningsby, who, in writing to us last month from his present address at Southgate, says : "I think C. Huttonii has very little claim to be included under Cymbidium. There were several plants in Mr. Hamilton-Smith's collection, and I tried many times to cross them with various Cymbidiums, both species and hybrids, but always with the same result—failure. Not one of the flowers upon which the C. Huttonii pollen was used ever attempted to make a pod; they simply withered and fell off. I had just the same result when the pollen of other Cymbidiums was placed upon C. Huttonii, although I got pods easily enough when the flowers were self-fertilised."

Our illustration, from a photograph by Mr. G. I'Anson, shows the plant which received a First-class Certificate at the Royal Horticultural Society, July 4th, 1905, when exhibited by Messrs. Charlesworth & Co. Two varieties were then shown, one lighter than the other, the longest raceme bearing fifteen flowers.

ONCIDIUM CAVENDISHIANUM.—This elegant species was discovered by Mr. G. Ure Skinner in the neighbourhood of the city of Guatemala, and was one of the first Orchids sent by him to England.

ADA AURANTIACA.—The brilliant orange-coloured flowers of this species are always of interest, for they are collected in a close raceme enveloped in thin cucullate membraneous bracts, and never open except at their point. Linden referred it to Brassia, but Lindley remarked that "it differs from this in some important particulars:—The lamellæ of the lip are confluent and membranous; the lip is parallel with the column and solidly united to the base of it; the column is twice as long as in other Brassias, and thin-edged at the base; the caudicle is short and obovate, while the gland is circular. For this reason I place it at the end of the glumaceous Brassias." Ada aurantiaca was discovered by the Belgian collector Schlim, about the year 1851-2, on the eastern Cordillera of Colombia between Ocana and Pamplona, at 8,500 ft. elevation. A variety is known with light orange-yellow flowers.

NONSYMBIOTIC GERMINATION OF ORCHID SEEDS.

IN our March issue reference was made to the method adopted by Messrs. Charlesworth & Co. in the raising of Orchids from seed. The success achieved by this firm is in a large measure due to the use of a compost which is first sterilised and then infected with the necessary fungus. When sufficient time has elapsed for the fungus to permeate this compost, the seed is sown, and germination takes place with regularity and rapidity. This union of fungus and seed may be described as a symbiotic relationship.

But can Orchid seeds be made to germinate by any other means; that is, without the aid of fungal infection? In the *Botanical Gazette*, January, 1922, Mr. Lewis Knudson, writing from the Laboratory of Plant Physiology, Cornell University, U.S.A., states in an article on the Nonsymbiotic Germination of Orchid Seeds that germination of seeds of Lælia, Cattleya, and related forms is possible without the aid of any fungus when certain sugars are supplied. Experimental results with eighteen different culture solutions show that fructose is more favourable for growth of the embryos than glucose. An interesting observation was that embryos in sugar-containing cultures accumulate a considerable reserve of starch.

Mr. Knudson remarks: "The increasing importance of Orchid culture in America, the difficulties in and the restrictions on the importation of plants, and the desirability of creating new hybrid forms, make particularly desirable a method for germinating the seeds. Certain data from the experiments of Bernard and Burgeff, indicating that soluble organic compounds might cause germination, and my own previous experiments on the organic nutrition of plants, demonstrating that various sugars have a very favourable influence on growth, are indications that germination of Orchid seeds might be obtained by the use of certain sugars. This proved to be true."

The cultures were all grown under aseptic conditions. For sterilizing the seeds, the calcium hypochlorite method of Wilson was adopted. This consists of 10 gm. of calcium hypochlorite in 140 cc. of distilled water. After filtering, the clear liquid is placed in a small test tube with a quantity of seed and shaken until each seed is moistened, the process being repeated several times. The seeds are then transferred by the use of a platinum needle, about 100 at a time, and scattered over the nutrient agar in the culture tubes. A method is described of transplanting the seedlings from tubes to larger flasks. Efforts to develope the seedlings on peat sphagnum mixture in flower pots in the open resulted in failures from various causes. The results of certain experiments indicate that more rapid growth will be obtained if the culture seedlings are transferred to sterile media containing sugar and grown for a year or two under these conditions.

"What is the significance," enquires Mr. Knudson, "of these results in relation to the views advanced by Bernard and Burgeff, and quite generally believed to-day, that for the germination of Orchid seeds infection of the embryo by the appropriate fungus is essential? . . . In brief, it is conceivable that germination is induced not by any action of the fungus within the embryo, but by products produced externally on digestion or secreted by the fungus. . . . In conclusion, it may be stated that the evidence for the necessity of the fungus for germination has not been conclusively proved. There is still considerable work to be done before the validity of the fungus hypothesis can be proved or disproved."

The article is illustrated by photographic plates showing embryos in small spherule and seedling stage; culture tubes with various solutions; and a flask containing seedlings one year old.

CYMBIDIUMS FROM GLASGOW.—The extensive collections of Orchids in the Glasgow Botanic Gardens and Public Parks are always a source of attraction to the numerous visitors, and during the last month or two the Cymbidiums have been a special feature. From Mr. James Whitton, J.P., V.M.H., the able Director, we have received a very interesting series of about two dozen flowers of various Cymbidium hybrids. Some three years ago a hundred seedlings were purchased, and the fine results already obtained will doubtless be surpassed as the plants increase in strength and flowering capacity. Cymbidiums are found to be very suitable for the requirements of the above Gardens, as they last a long time in bloom, and even in a cut state their durability far exceeds that of many other flowers. These blooms are excellent examples of good cultivation, being thick-textured and of bright colouration. C. Diana (eburneo-Lowianum × Pauwelsii) is an ivory-white flower with a rose-coloured column and slight spotting on the lip. C. Glasgow (eburneo-Lowianum × Alexanderi) has cream-coloured sepals and petals, and the lip suffused with rose-pink, making a pleasing flower. In C. Beryl (Lowianum × Pauwelsii) the reddish-crimson blotch on the lip shows to advantage against the straw-coloured sepals and petals, while in C. Goldflake the large flower is of soft rose tints, the lip spotted with crimson, and the keels thereon bright yellow. Some varieties of C. Lowianum, a well-known species, are also included, and from this cool-growing Burmese plant many of the best present-day hybrids have been evolved. Its graceful arching spike imparts a truly decorative nature, and this particular quality is very much appreciated by all who admire the beautiful plants in the Glasgow Botanic Gardens, as well as those in Springburn Park, Tollcross Park, and Queen's Park. In these four collections there are at least 12,000 Orchids, and it is questionable if a larger number is owned by any other municipality in Great Britain.

PHILIPPINE ORCHIDS.

THE fifth fascicle of *Orchidaceæ* contains an enumeration by Prof. Oakes Ames, A.M., F.L.S., of the genera and species of Philippine Orchids. Since the publication of this volume in 1915 numerous collections have been received, both from the Bureau of Science and from private collectors, that have contained new or noteworthy species. Of the material that accumulated, Mr. Oakes Ames has set aside from time to time specimens that seem to be obviously new to the Philippine flora. Such of these as proved to be undescribed or worthy of attention are included in a list which forms part of *Orchidaceæ*, fascicle vi, issued from the Ames Botanical Laboratory, North Easton, Mass., U.S.A.

"It has become apparent," states Mr. Oakes Ames, "that numerous genera of Philippine Orchids need to be thoroughly reworked if we are to profit from the material that has been referred, often tentatively, to various species that were originally described from a limited number of specimens or from a single plant. Critical work in the field may be necessary, together with a careful study of Malayan types, to solve some of the problems suggested by Malaxis. This genus constitutes a very puzzling group which, when studied from herbarium material, presents an exasperating number of perplexities."

Although the evidence obtained from an examination of recent collections indicates that substantial progress has been made towards a comprehensive survey of the Philippine Orchid flora, Mr. Oakes Ames says: "It is highly probable that unexplored and lightly touched regions, especially the mountainous regions of Mindanao and Mindoro, will bring to light many new species."

Of the four accompanying plates, that of Philippinæa Wenzellii is of considerable interest, for it represents a new genus, and the plant is only known from Leyte, Mindanao and Luzon. "Present records prove that Philippinæa is the only endemic Orchid genus of the Philippine Islands. If it should remain so, it would be within reason to assume that the majority of the Orchid species of the Philippines have originated in the archipelago, and that their phylogeny may be traced to the species of Celebes, Java, Borneo, and Sumatra."

Regarding Vanda luzonica, the description was taken from a plant which flowered in the collection of Mr. Edwin S. Webster, Chestnut Hill, Mass., U.S.A., in January, 1920. "Sepals white, irregularly splotched and stained near the apex with rose purple. Petals similar, but with the purplish markings extending in broken lines to the base. This specimen differs from the one figured in the *Botanical Magazine* in that the purple markings on the sepals and petals are diffused and not concentrated."

Vanda Sanderiana is placed under the new generic name Euanthe Sanderiana, formed for it by Dr. Schlechter in *Die Orchideen*, 1915, p. 567.

THE POLLINARY MECHANISM OF PHAJUS.

NOTES on the Pollinary Mechanism of Phajus is the title of a paper read by Dr. R. S. Rogers before the Royal Society of Australia on October 13th, 1921, and published in the Society's *Transactions* (vol. xlv., p. 264). Two species of Phajus indigenous to Queensland have been accepted by the late R. D. Fitzgerald, F. M. Bailey and other botanists. Both P. grandifolius and P. Bernaysii are the subjects of coloured plates prepared by Fitzgerald, but he did not live to complete the letterpress, with the result that many important points concerning the pollinary mechanism have been left in doubt. Dr. Rogers has been fortunate in receiving from Mr. C. T. White, Director of the Brisbane Botanic Gardens, a quantity of material which enables him to supply many details in regard to these Australian species which hitherto have been obscure or uncertain.

Concerning Phajus grandifolius, Dr. Rogers deals in detail with the various stages of development of the column, and explains how self-fertilisation takes place in the bud. "It is inevitable," he states, "that every flower should become fertilised, unless some untoward circumstance should interfere with the descent of the anther. The only service conferred upon the plant by the expansion of the flower would appear to be the rapid drying up of the stigmatic contents and the effectual sealing of the stigmatic-canal. After expansion, the remains of the four lower masses are still to be traced as four rather elastic caruncles adhering to the back of the stigma."

Phajus Bernaysii bears a large and handsome yellow flower. With regard to the structure of the column, Dr. Rogers says: "It approaches closely to that of P. grandifolius, but whereas the opening into the stigmatic cavity of the latter is V-shaped, in P. Bernaysii it is quadrilateral in form and very much smaller. The chief difference, however, is to be found in the attachment of the pollinia, which are approximately of the same size in both series so long as they are uninfluenced by the stigmatic fluid."

The tendency in the genus Phajus to produce supplementary anthers or staminodia is well known. Three such cases were observed by Dr. Rogers in the material under examination. The staminodes both took their origin from the upper shoulder of the wing and represent the suppressed lateral anthers of the inner whorl. An accompanying plate shows five figures of the column and anther of P. Bernaysii.

Further information regarding Phajus Bernaysii will be found in the ORCHID REVIEW, vol. xxix., pp. 81, 97.

CYCNOCHES LODDIGESII.

THIS singular Orchid owes its general name, "Swan's neck," to the long, slender column, gracefully curved like the neck of a swan. It is the original species upon which the genus was founded by Lindley in

CYCNOCHES LODDIGESII.

1832. The following year it was figured by Loddiges with the remark:—"This extraordinary plant is a native of Surinam; it was sent to us in 1830 by our kind friend Mr. Lance, and it flowered in May, and again in the winter of 1832." For a time this species appeared to be fairly plentiful, but

it became scarce, and was ultimately almost lost sight of until re-introduced about twenty years ago. The sepals and petals are light green, more or less suffused and veined with pale brown, and the lip is white, with a few dark purple-brown spots near the base, and an area of the latter colour at the junction of the lip and column. The flowers exhale an aromatic perfume. Those seen in the illustration are males, but when Lindley saw a spike of female flowers, which are of different formation, he regarded it as a second species under the name C. cucullata, in allusion to the hooded column. However, in the autumn of 1836 a plant in the garden of the Horticultural Society produced flowers of C. Loddigesii on one side of the pseudobulb and those of C. cucullata on the other side. Lindley thereupon called it a "freak," though it is now known that the above plant was in fact bearing both male and female flowers. Other cases are on record of only female flowers being produced.

MAXILLARIA PICTA.—This was originally sent to Mrs. Arnold Harrison, of Liverpool, in 1831, by her relative, Mr. William Harrison, who had gathered it on the Organ Mountains, near Rio Janeiro, and shortly afterwards imported by Messrs. Loddiges, of Hackney. At one time it was very popular, and some remarkable specimens were seen under cultivation.

RENANTHERA COCCINEA.—As this interesting species does not appear to be free-flowering, the method adopted at Chatsworth some years ago may be of use to cultivators who have so far failed to flower it. The plants were placed on the west side of the large conservatory fully exposed to the sun after 1 p.m. Pieces of the stems about a foot long, having a few roots, were attached to poles of Silver Birch 8-12 feet long, and about six inches in diameter with the bark on. These poles were fixed perpendicularly in a border, and no potting material whatever was used for the plants. As the stems increased in length, the new aerial roots emitted by them soon attached themselves firmly to the birch poles. From the beginning of May to the end of September fire heat was dispensed with, and the temperature of the house was entirely controlled by the state of the weather. Great fluctuations occurred; on bright days it frequently rose to 90 degs., notwithstanding the greatest possible amount of ventilation; in dull weather it fell to 55 degs., while in changeable weather it varied as much 20 degs. in the course of a day. During the summer the plants were syringed three or four times a day, in winter two or three times a day according to the weather, or as the birch poles happened to be wet or dry. Strong and healthy stems flowered annually, and occasionally twice a year, continuing in bloom for several months.

ZYGOPETALUM (BOLLEA, PESCATOREA, ETC.).

IN all representative collections of Orchids there are at least three main divisions in which the plants are cultivated: East Indian, or hottest house, intermediate, and cool. Branching from these are many sub-divisions, consisting of plants which require a somewhat different treatment to the other occupants of the house in which they may be placed. For instance, in many gardens there are, besides the divisions above mentioned, a Cattleya house, a Mexican house, a Dendrobium house, a Masdevallia house, etc. Even with such additional structures at hand it is sometim es difficult to find the right place for every class of Orchid. It may be a question of heat, of moisture, of air, or of light, and some plants may appreciate one or the other, but not the whole. Some may like the heat and moisture of the Dendrobium house, but the strong light would be objectionable, and the plants fail to thrive in it. The grower therefore selects for them a position in some part of a house where their requirements may be satisfied without interfering with the welfare of the other inmates; by so doing, many plants which come from various parts of the world may be grown successfully.

One very difficult sub-division is formed, comprising the sections of Zygopetalum known as Bollea, Huntleya, Pescatorea, Warscewiczella Kefersteinia, Batemania, and Chondrorhyncha, all of which possess rhizomes, only. For many years these beautiful Orchids have baffled cultivators, and it is a general experience that it is very difficult to obtain reliable imformation respecting their geographical stations and the precise conditions under which they thrive in their native habitat. The following imformation, which I obtained from a gentleman who had collected and successfully imported and established many of these plants, may be of some interest and assistance to the would-be cultivator.

The plants in question grow in moist shady woods, where the direct sunshine never reaches them, and generally in very unhealthy climates. In the dry season the dews at night are exceedingly heavy, and the trees are almost always dripping with moisture. From this it is easy to understand what the difficulties must be to get these plants home alive. Chondrorhyncha fimbriata is mostly found on the ground growing in masses in decayed vegetable matter. All of these plants generally flower at the begining and during the rainy seasons. The plants when collected are partially dried before packing to prevent rotting in transit, but not too much, in order that they may resist the journey. Bnt even when the greatest care is taken in this respect large numbers arrive in dead condition, and the survivors mostly in a very dry state. It is indeed rare when buying small bundles of imported plants at sales to obtain more than a few live rhizomes. When

the plants arrive home it is advisable to lay them separately on a warm stage covered with coke, or fine coal, previously well moistened, for about a fortnight. They should then be looked over, all the dead portions and decayed matter carefully removed, and the old roots examined, only those readily noticed as useless being cut off. The sound portions of the plants that are firm, and do not give way to pressure from the thumb and finger should be placed in pots or pans containing clean potsherds, using pieces of the latter and charcoal to fill up around them. Small stakes are required in some instances to make the rhizomes secure and upright. The pots should then be plunged up to their rims in a bed of sphagnum moss, and occasional light sprayings, always with tepid rain water, should be given when they appear to be very dry. When signs of movement are noticeable, the plants are moistened more frequently overhead, but never sufficiently to saturate them. The crocks and charcoal naturally absorb the moisture from the moss and supply sufficient at the base to encourage root action.

On the appearance of growth the charcoal and some of the potsherds should be removed, leaving the pots about three-parts filled. The compost should consist of coarse osmunda fibre, not lumpy, and fresh sphagnum moss in equal parts. Mix these well together, and add a good sprinkling of fine crocks and coarse silver sand. This mixture should be used at all future pottings or top-dressings. Pot each plant with moderate firmness nearly up to the rim of the pot, and surface with fresh living sphagnum moss. The plants will readily root into this, and should not be disturbed again until it is seen that they require more space. During very warm weather the syringe should be used frequently, at least two or three times daily, and a light dewing overhead during the evening will greatly assist growth. Under this kind of treatment the plants are seldom in need of water at the roots, but when the growths are vigorous and are gradually nearing their full development a good watering about twice a week is advisible. The staging and between the pots should always be kept damp, and plenty of ventilation afforded whenever the weather permits. Care must be taken to protect them from dry cold currents of air, and to ensure that the atmosphere is at all times warm and moist, with a temperature of 60-70 degs. during the day and 55 degs. the lowest at night. Give the plants a position were they will be protected from even weak sunshine. During the summer months, in addition to the ordinary shading, it is advisable to stipple the glass immediatly over-head. When grown in a suitable temperature and properly attended to, as regards overhead spraying and watering, these plants are seldom attacked by insect pests, such as thrips, etc., but slugs and cock-roaches are very fond of the young roots, and must therefore be constantly sought after and destroyed.

W. H. WHITE.

AN AMATEUR'S EXPERIENCE.

BY JOSEPHINE WALKER.

IS it not possible to popularize more the growing of Orchids? It is astonishing how many people are still under the impression that the growing of Orchids needs a very deep purse, and terrific heat. A friend asked me last week, almost with reverence, if it is possible to grow a few Orchids in a small span-roofed greenhouse, running north and south, where he could just keep the frost out in winter. I said not with the plants he had in then, but if he cared to throw them out—and it appeared to me the loss would not have been a heavy one—I would for a few pounds undertake to stock it with Odontoglossums that would yield results he had never dreamed of.

I see that there are three Orchid Challenge Cups for competition at the Spring and Autumn Show of the Royal Horticultural Society. Two are open to such amateurs as employ not more than three assistants, including a head gardener; and the other is open to all amateurs; how many assistants they are allowed I do not know! Is there not a cup for the amateur who grows his own plants? I do not mean necessarily for quantity, because perhaps two or three plants which have cultural excellence may be a better exhibit than a dozen from a collection that simply has greater numerical facilities. Surely here is a field to popularize Orchid growing amongst the smaller people, by giving a few small cups at, say the Autumn Flower Shows in different centres, and so encourage the small enthusiastic amateurs to come together and exchange views. My husband has often told me that in the days before we were married one of the leading Orchid importers used to take a sale-room in a leading hotel in the city, and bring down batches of Dendrobiums and auction them, just as is done with the Dutch bulbs and rose trees. Many of the people who attended and bought were not really Orchid growers; they probably bloomed the plants and then lost them, but they could not fail to have been impressed with their beauty. There must be many such to day, who, if they knew how easy Orchid culture really is, would be tempted to come in.

I am going to tread on dangerons ground, but I am open to correction. Having paid tribute to Mr. J. M. Black, he will, I am sure, forgive me for differing from him, especially as we are both trying to attain the same goal —the popularizing of Orchid growing. In the first volume of the *Orchid World* Mr. Black wrote an article on Orchid hybridisation, in the course of which he also gave his views on conditions under which Orchids could and could not be grown. As the article nearly stopped us attempting the apparently impossible, it may have actually done so for others. Mr. Black will, I am sure, forgive me if I quote some extracts from the article in question,

only to show that, in my opinion, Orchids can be grown, and grown successfully under almost any conditions. And it is not the conditions that matter, it is the grower, who, if he has enthusiasm and a love of the plants, can and will overcome any difficulties. The extracts in question happened to appear just before we had to move our little lot along here, where, as I have already stated, the only accommodation is the big conservatory, so one can imagine the following caused us to furiously think. "Orchids are sometimes grown—or alleged to be grown—in lofty conservatories. To grow Orchids in a semi-detached lofty conservatory is analagous to growing a Dutch bulb in the neck of a bottle of water; it will yield up what was imported in it, but lay up little store for a future effort. I am prepared to be told that Cypripedium insigne, some insigne hybrids, Cœlogyne cristata, and a few other Orchids will grow on indefinitely in a moist corner of a conservatory; but one becomes an Orchid grower in only a limited sense if confined to these, admirable though they are." One can imagine our feelings. My husband and I had a serious council, and decided that we must go on, and if we had to die, to do so fighting.

I think we may claim to have proved that not only is it possible to grow Orchids successfully, but that it is possible, if needs be, to acquire them when they have fallen to the lowest ebb at which life can exist and nurse them back to robust health. These plants have made bulbs and given spikes of bloom that, as far as it is possible to judge, were not excelled when they were grown under what were apparently ideal conditions at a previous period, for some of them came from very famous collections. So do not be discouraged, have a try, study your plants, love them and they will love you.

MAXILLARIAS.—A genus widely distributed throughout Central America, from Brazil to the West Indies. The species vary greatly, but may be broadly divided into two sections—the one, of which Sanderiana, grandiflora, etc., are representative, with short rhizomes and clustering pseudobulbs; in the other, of which meleagris and tenuifolia are typical, the pseudobulbs are borne at short intervals on long, scandent, or ascending rhizomes. In both sections the pseudobulbs are comparatively small, oval, rather flat, generally ancipitous, and often sheathed with the leaf bases and foliaceous bracts, producing the single-flowered scapes from the bases, usually between the pseudobulb and a leaf. The culture of Maxillarias is very similar to that of Lycaste, excepting that peat, or other fibre, and sphagnum moss are preferable potting materials. The plants should be kept moist all the year round, and be shaded rather heavily during sunny weather. The section with scandent rhizomes are better placed on blocks of wood or pieces of tree fern.—*Sanders' Orchid Guide.*

LÆLIOCATTLEYA GLADIATOR

LÆLIOCATTLEYA GLADIATOR.—The annexed figure represents a fine specimen plant of Lc. Gladiator (C. Mossiæ × Lc. callistoglossa) flowering in the collection of Lieut.-Col. Sir George Holford, K.C.V.O., Westonbirt, where it had been cultivated by Mr. H. G. Alexander.

HYBRID OPHRYSES.

FOR some years past M. Fernand Denis, Balaruc-les-Bains, France, has been interested in the raising of hybrid Ophryses; in fact, O. Grampinii, which he produced by crossing O. tenthredenifera with O. aranifera, was probably the first artificially raised hybrid of the genus. O. Grampinii has since been crossed with O. lutea major, and the resulting hybrid, known as O. Denisii, is one of the finest of its kind yet seen; a spike carrying eight flowers cut from a plant ten years old is very effective, the outer area of the large labellum being of bright greenish-gold colour, while the centre has the well-known markings that are characteristic of the genus.

Up till now, M. Denis has raised thirty different hybrid Ophryses, and the selection of cut flowers which he kindly sends shows how interesting and beautiful they are. Among them are two varieties of O. dubia (Bertolonii × Macchiattii) with bright rose-coloured sepals and petals, and a dark velvety lip; O. Fernandii, which has a distinctly three-lobed labellum; and two varieties of a new hybrid between O. tenthredinifera and O. arachnitiformis.

Two varieties of the hybrid between O. arachnitiformis and O. Bertolonii are of special interest as representing a plant named O. olbiensis (*Journ. Bot.* 1914, 271) by Colonel M. J. Godfery, but who afterwards stated (*l.c.* 1922, 58), "I was not aware that this name had already been applied to another hybrid Ophrys, O. bombyliflora × O. scolopax (Camus, *Mon. Orch. Europe*, p. 306, 1908). I therefore now replace it by O. neocamusii, in honour of Mdlle. A. Camus, joint author of the monograph quoted above, and responsible for the anatomical detail of that work, in recognition of her great and numerous services to botanical science."

Seven varieties of O. Macchiattii (aranifera × speculum) make an interesting series of this hybrid, which was originally described in 1881 by Macchiatti, from materials collected in the Island of Sardinia. There are also three varieties of O. Chobautii, and a pretty hybrid between O. lutea major and O. aranifera having light greenish flowers. O. artefacta, produced by crossing O. tenthredinifera with O. Macchiattii, has somewhat larger flowers, with a handsomely marked labellum. One of the prettiest is a new hybrid between O. tenthredinifera and O. arachnitiformis, which will be described by Dr. Keller; it is represented by three varieties, in all of which the sepals and petals are of bright rose colour, and the lip greenish-brown.

M. Denis remarks that, like the epiphytal Orchids, the hybrids of the terrestrial kinds do not always flower at the same time as their parents. Thus, the flowers of the hybrids of O. Bertolonii and of O. arachnitiformis are produced about a fortnight before those of their parents.

A second consignment of these pretty flowers include five spikes of Ophrys arachnitiformis. Some doubt has been placed upon the true nature of this plant by various authorities, as it shows much variation when in a wild state. Mons. Denis self-fertilised it, and although in the resulting seedlings some variation is shown, it is not more than occurs with plants that have arisen naturally. Hence he believes that it is a true species and not a hybrid. Mr. W. H. St. Quintin has stated (*Orchid World*, vi., 99) :—"I think anyone who has spent much time in a district where this plant occurs will have come to the conclusion that it is a good species, though a local one, and showing much variation."

O. balarucensis (lutea major × aranifera) is represented by seven robust spikes with yellowish-green flowers having reddish brown on the labellum. O. pseudofusca (fusca × aranifera) is somewhat similar to the preceding, as one would expect from the parentage. O. Battandieri (fusca × lutea) is apparently not fully developed, but it gives promise of finer results. In O. quadruplospuria (Grampinii × Macchiattii), a taller spike is seen and with darker flowers.

Regarding a fine example of Ophrys fallax, M. Denis gives the parents as Grampinii × aranifera, and says that Mr. Rolfe was in error in stating them to be Grampinii and bombyliflora.

M. Denis also sends two good examples of Orchis lactea, a species as rare as it is difficult to cultivate. He obtained them from Garons, near Nimes, and the spikes bear numerous milk-coloured and rose-tinted flowers, the lateral sepals marked with three dark lines.

SOPHRONITIS GRANDIFLORA.—This pretty Brazillian species is of dwarf habit, seldom exceeding three inches in height, and the small pseudobulbs bear a single leaf. The flowers are brilliant scarlet and very effective. It is best cultivated in shallow pans with a compost of fine fibre, sphagnum moss and a few chopped leaves, and suspended in the cool house. A moist condition should be maintained throughout the whole year, slightly less water being given when not in active growth.

"THE ROSE ENCYCLOPÆDIA."—This useful book of reference to all that appertains to the Rose has been compiled by Mr. T. Geoffrey W. Henslow, M.A. Its 440 pages are divided in 19 chapters, each devoted to a special subject connected with this popular flower. There are 50 reproduced photographs of the best varieties in commerce, and a similar number of plans of Rose gardens. This book is a credit to all concerned in its production, and its success is assured by the fact that over 70 horticultural traders interested in the Rose growing industry have given it their cordial support. Published at 12s. 6d., by Vickery, Kyrle & Co., Ltd.

CULTURAL NOTES.

BY J. MACKAY, ORCHID GROWER TO JAMES J. JOICEY, ESQ., THE HILL, WITLEY, SURREY.

MOST growers will find the present month both a busy and an interesting one, for there will be many plants to be potted, as well as numerous ones coming into flower. The enthusiast can enjoy many happy days attending to the various requirements of his plants that are producing their flower buds, watching and aiding their development. This month is usually a very prolific one from the floral point of view.

So far, we have not enjoyed a great amount of sunshine, and shading of the houses to any extent has not been much in evidence, yet one must expect the blinds to be in general use soon. They will require henceforth considerable attention, and if the plants have been arranged with forethought as to their requirements in the matter of light and shade, these duties will be much simplified. The majority of the plants recently potted are growing and rooting nicely, and with the abundant use of atmospheric moisture and judicious use of the ventilators they will be encouraged to make free healthy growth, without which no Orchid can be maintained in a satisfactory condition for long. The continued spell of cold east winds has not been favourable to the free use of the ventilators; however, when outstde conditions are favourable they should be used freely, taking care to avoid causing draughts, which are favourable to attacks of thrips, as well as being detrimental to the growth of the plants.

Watering and spraying of the plants will also require considerable care and attention from now onwards. The requirements of each plant must be governed by the state of growth and the condition of the root action: those that are growing freely will require more frequent applications, whilst newly potted plants will need little direct watering beyond frequent spraying, and syringing between the pots. Flowering plants will require a fair amount of water whilst developing their spikes, the point to be considered being that the pseudobulbs are not allowed to shrivel, otherwise new growth will be greatly retarded from the commencement. I would here mention the necessity of removing the flower spikes within a reasonable time in order to relieve the plant of any undue strain.

In the Cattleya house a good many species, together with their various hybrids which flower this month, may afterwards need attention as regards repottıng. Such species as C. Gaskelliana, C. Schröderæ, C. Trianæ, C. Percivaliana, C. Lawrenceana, C. labiata, and hybrids derived from these plants, will be making fresh growth and the roots will be active. The present is a suitable time to give them attention. The compost preferable consists of osmunda fibre and sphagnum moss, with the addition of crushed

crocks to keep the compost porous. Pot firmly and give them a shady position in the house, water carefully until re-established, when more frequent supplies may be given. Cattleyas, like most other plants, require rejuvenating from time to time by giving them a sweet healthy compost to grow in; by affording them this attention at the right time the plant's life is prolonged and the best results obtained. C. gigas, C. Dowiana and C. Hardyana are others commencing to grow—some have the growth well forward, give them a position well up to the glass, where they may get a fair amount of sunlight and ventilation. Water should be given sparingly until growth is well advanced, increasing the supply as the sheaths and young leaves are formed. These are better left over for potting purposes until fresh roots are formed from the new growths. Light is most beneficial to their welfare, especially towards the autumn, when they are maturing their pseudobulbs.

Plants of Selenipedium, such as S. grande, S. Sedeni, S. caudatum and S. Schröderæ, if not already potted, may receive attention. They like a good open compost consisting of fibrous loam, AI. fibre, and sphagnum moss, with crushed crocks and sand intermixed. Give them ample drainage, for when well rooted they like copious supplies of water, especially when in full growth. Give them a shady position in the warm house, and keep their surroundings moist.

ODONTOGLOSSUM CITROSMUM.—Plants of this delightful Orchid not showing spikes may safely be repotted. They resent too much root disturbance, and should only be done if absolutely necessary. Pot them in shallow pans and grow them suspended in the Cattleya house, give water sparingly until the pseudobulbs are forming, when larger supplies may be given. When growth is completed, give sufficient only to maintain rigidity.

LYCASTES.—Plants of L. Skinneri and its varieties, of which there are many beautiful forms, are commencing to grow again. When the growths are two or three inches high is a most suitable time to repot them. A good open compost is required, similar to that for Anguloas. Give good drainage and pot moderately firm, surfacing with sphagnum moss. L. aromatica, L. cruenta and L. Deppei are showing flower spikes and should not be disturbed until after flowering. For some time after potting give water carefully, increasing the supply as the growths develop. Give them a position in the intermediate house where they will get a fair amount of ventilation during growth.

SOBRALIAS.—These reed-like Orchids are developing flowers at the present period, and will continue to give a succession of bloom for some time. After flowering, they may be top dressed or repotted as the case may be. Being strong rooting plants, a fairly good compost is necessary, consisting of fibrous loam, polypodium fibre, and sphagnum moss intermixed with

crushed crocks and coarse silver sand. Give them frequent sprayings and plenty of water when in full growth.

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR.
Brassocattleya Queen of England ...	C. Germania × Bc. Mdm. Chas. Maron ...	Mrs. Gratrix.
Brassocattlælia Goveri	Bc. Digbyano-Mossiæ × Lc. G. S. Ball ...	R. G. Thwaites, Esq.
Brassocattlælia Melba	Bc. Digbyano-Mossiæ × Lc. Rubens ...	Stuart Low.
Cattleya Mad. Maurice Verdonck ...	C. Minucia × C. Hardyana	M. Verdonck.
Cattleya Mrs. Barry Cooper	C. Fabia × C. Schroderæ	Sanders.
Cattleya Omar	C. Leda × C. Enid	Stuart Low.
Cattleya White Queen	C. Douai × C. Lueddemanniana	Flory & Black.
Cymbidium Eagle	C. Alexanderi × C. Gottianum	Sanders.
Cymbidium Glasgow	C. eburno-Lowianum × C. Alexanderi ...	Jas. Whitton, Esq.
Cypripedium Ada Watson	C. The Baron × C. Traceyi	Sir H. S. Leon, Bart.
Cypripedium Charles Puddle ...	C. aureum × C. chrysotoxum	G. F. Moore, Esq.
Cypripedium Crusader	C. Julian × C. Lucifer	Sir Geo. Holford.
Dendrobium variabilis	D. nobile × D. Thwaitesiæ	Sanders.
Læliocattleya Sladdenii	C. Octave Doin × Lc. Bella	C. Sladden, Esq.
Læliocattleya Sol	Lc. Apollo × Lc. luminosa	C. J. Lucas, Esq.
Læliocattleya Triton	Lc. Tunis × C. Trianæ	Stuart Low.
Læliocattleya Urbania	Lc. eximia × C. Warscewiczii	Hassall.
Læliocattleya Valentine	Lc. Geo. Woodhams × Lc. luminosa ...	C. J. Lucas, Esq.
Læliocattleya Wavrinhoe	C. Robt. de Wavrin × Lc. Ivanhoe ...	Hassall.
Læliocattleya Yellow Wings ...	Lc. Ascania × C. Octave Doin	Flory & Black.
Odontioda Clarinda	Oda. Zephyr × O. eximium	Flory & Black.
Odontioda Cyclops	Oda. Bradshawiæ × Oda. Mars	S. Gratrix, Esq.
Odontioda Maureen	O. eximium × Oda. Chanticler	Charlesworth.
Odontioda Mercia	O. Dora × Oda. Felicia	Charlesworth.
Odontioda Moyra	C. vulcanica × Oda. Charlesworthii ...	Charlesworth.
Odontioda Naralda	O. Doris × Oda. Bradshawiæ	Charlesworth.
Odontioda Opal	O. eximillus × Oda. Cooksoniæ	Armstrong & Brown.
Odontioda Ruby	Oda. Brewii × O. Rio Tinto	Sanders.
Odontioda Tacita	O. illustrissimum × Oda. Royal Gem ...	Charlesworth.
Odontioda Thelma	O. Dora × Oda. Wilsonii	Charlesworth.
Odontioda Theresa	Oda. Dora × Oda. Coronation	Charlesworth.
Odontoglossum Belenus	O. amabile × O. Olympia	McBean.
Odontoglossum eximatum	O. eximium × O. maculatum	Charlesworth.
Odontoglossum Lydia	O. Eximillus × O. waltonense	Flory & Black.
Odontoglossum Mavis	O. Lawrenceanum × O. Vuylstekeæ ...	Sanders.
Odontoglossum Miresium	O. eximium × O. mirum	Sanders.
Odontoglossum Odin	O. A O. crispum	Stuart Low.
Odontoglossum Rosamond	O. Rosalind × O. harvengtense	Mansell & Hatcher.
Odontoglossum Surprise	O. Uro-Skinneri × O percultum	Sanders.
Odontonia Ariel	O. Dixsonæ × M. Bleuana	Stuart Low.
Oncidioda Stuart Low	Onda. Cooksoniæ × On. macranthum ...	Stuart Low.
Potinara Gratrixiæ	Sl. Gratrixiæ × Bc. Mrs. J. Leemann ...	Flory & Black.
Rolfeara Sunrise	Sc. Atreus × Bc. Mrs. J. Leemann	Armstrong & Brown.
Sophrocattleya Clarinda	Sc. Atreus × C. Empress Frederick ...	Flory & Black.
Sophrocattleya Prince Shimadzu ...	Sc. Doris × C. King George	Flory & Black.
Sophrocattlælia Avon	Slc. Helen × Lc. Geo. Woodhams ...	Stuart Low.
Sophrocattlælia Hector	Lc. Hector × Sc. Blackii	Flory & Black.
Sophrocattlælia King George ...	Slc. bletchleyflora × C. King George ...	Flory & Black.
Sophrocattlælia Mars	Slc. Marathon × C. Clotho	Armstrong & Brown.
Sophrocattlælia Prince of Orange ...	Slc. Eros × Lc. Thyone	Flory & Black.
Sophrocattlælia Prudence	Sl. Orpetii × C. Fabia	Sir Geo. Holford.

THE AMATEUR'S PAGE.

WHILE some amateurs starve their plants by neglecting to replenish the compost, there are others who go to the opposite extreme and sicken them by an over-abundant supply. We can, indeed, be too kind to our plants, and by placing them in pots that are many sizes too large an arrest of development is more likely to occur than the hoped for continuous improvement. One of the secrets of the good health of the plants seen in the trade growers' establishment is the comparatively small size of the pots used. With the present high cost of fuel no space on the staging can be allowed to remain unoccupied, nor can any plants take up more room than is necessary for their cultivation. But with many amateurs there is always a feeling that each time a plant is repotted a larger pot must be used. Dendrobiums, especially, dislike being over-potted, and quickly show their disfavour when so done. One of our most successful cultivators of this genus always divides his plants in the spring of the year and places neat pieces consisting of three to four healthy bulbs in pots that just allow room for the new growth to be made, and for the roots that are produced from it to enter the compost. The results are truly astonishing, in nearly every case bulbs are made that considerably exceed the former ones in height and girth. Plenty of water is given during the growing season, and with the small amount of compost in use there is practically no chance of the new growth damping off or of the roots perishing from stagnant surroundings.

The natural habit of most Orchids is to extend themselves by producing about one new bulb each year, and in the same direction, so that in course of time a Cattleya would have, say, ten bulbs standing erect in a row, and require a pot about ten inches in diameter. Such a pot as this would require far more compost than the new growth requires. The proper treatment for such a plant is to divide it, placing each plant in a separate pot, or else placing both pieces side by side, with both leading growths pointing in the same direction. By thus using a pot about half the former size there will be a considerable saving in the amount and cost of the compost, while the health of the plant will be more easily maintained.

Years ago, large specimen plants were more desired than they are now, and one of the methods then adopted, and one, in fact, that might be utilised to a larger extent to-day, was to place inside the large pot a smaller one in an inverted position. This had the effect of providing ample ventilation to the roots, and always gave successful results with many of the smaller growing plants that are not deep rooting. But the same effect can no doubt be produced by using shallow pans, which can be placed on the staging or suspended by wires from the roof. Special Orchid pots and pans with large holes in the side can sometimes be procured, and they certainly

have many points in their favour when used for plants accustomed to a free circulation of the atmosphere.

One sometimes sees an old straggling plant of an Odontoglossum that would be greatly improved if some of the back bulbs were removed and the more recent portion placed in a shallow pot with fresh, sweet compost. By removing the flower spike for a season or two considerable assistance will be given towards the quick recovery of its former vigour. Owing to the moisture present in an Orchid house at almost all seasons of the year, there is much work to be done in keeping the pots clean, and frequent washings are needed to remove the green slime and moss that chokes up the pores of the pots and so retards ventilation. Some makes of pots are more porous than others, but all in time need cleansing.

When placing the compost around the plant always take care that the roots are arranged in as natural a way as possible. On no account should they be compressed into a solid mass. Carefully work in the compost by means of a potting stick, an old tooth brush handle makes a capital tool for small pots, making it fairly tight as each additional portion is used. Some amateurs are apt to pot much too lightly, which is a great mistake. A rough guide is to hold the plant up by its bulbs or leaves, and if the pot drops off, or the compost comes out, then it has been potted too lightly. In placing the compost in the pot, it is not advisable to arrange it in horizontal layers more than can be helped, for the chances are that the top layer will spring off. Always fill up the central area around the plant first, gradually working towards the inner surface of the pot. By this means the compost will be maintained in position by side pressure. Any final tightening up can be accomplished by forcing in small lumps of sphagnum moss around the inside edge of the pot. When all the required compost has been inserted, the surface should be trimmed with scissors to give it a neat appearance.

With newly potted plants it is not often that much water is required until the roots become active in the new compost, but care must be taken to ensure that the old ball of compost does not become injuriously dry. The newly used and fresh sphagnum moss should be kept green by slight dampings. This moss is always a good guide to the state of the compost, for when dry it assumes a whitish appearance. It is as well to remined amateurs that rain-water should be used whenever possible, and that it should be of about the same temperature as the house. On this account the storage tanks should be placed inside the house. In times of drought, the rain-water should be reserved for the plants, and all damping-down done with water from the main supply, or from an outside source. It is as well to remind amateurs that in the majority of cases manure water has a very detrimental effect. A few notes on this matter will be given in a subsequent issue.

THE LATE MR. WALTER COBB.

WE very much regret to record the death on April 19th of Mr. Walter Cobb, of Normanhurst, Rusper, Sussex, at the age of 86. The eldest son of Mr. Frederick Cobb, of Canterbury, he well remembered the good old coaching days, and was always pleased to relate how by means of a velocipede he raced the Dover to Canterbury coach, receiving a hearty cheer from the passengers when the coach subsequently arrived at its

THE LATE MR. WALTER COBB.

destination. On removing to Sydenham, he commenced in 1869 the cultivation of Orchids, acquiring many of the tropical species, such as Aërides Fieldingii. The collection grew rapidly, and at one time a house fifty feet long was entirely filled with Lælia purpurata and Læliocattleya elegans. Cool-house Orchids also received his attention, and in April, 1880, Odontoglossum polyxanthum flowered with him for the first time in this country, and received a First-class Certificate when shown at the Royal Horticultural Society.

Removing to Dulcote, Tunbridge Wells, the collection considerably improved and acquired much fame. With all the various Orchids that were then being imported, Mr. Cobb rarely failed to take a keen interest. His

keen eye seldom missed an opportunity of acquiring a selection, sometimes a hundred of one kind would be purchased, at other times the number would run to over a thousand, and watching them day by day growing on to the flowering stage was to him a source of considerable pleasure.

Miltonia were among his favourites, and he received a First-class Certificate for M. vexillaria Cobbiana in June, 1882, and Awards of Merit for M. vexillaria dulcotensis in May, 1899. M. Cobbiana in October, 1895, M. Rœzlii alba, May, 1896, and M. spectabilis Moreliana, October, 1894. A First-class Certificate was given to the Dulcote variety of the latter species in September, 1896. In January, 1899, an Award of Merit was received for the Dulcote variety of Cypripedium bellatulum, and on other occasions Certificates were obtained for various hybrids of this genus. The collection at Tunbridge Wells contained thousands of Odontoglossums, especially strong was it in varieties of O. crispum. The Dulcote variety of O. triumphans received an Award of Merit in May, 1899, and O. Adrianæ Cobbianum obtained a First-class Certificate in May, 1901.

Mr. Cobb's interest, however, was by no means confined to what may be termed the popular and easily grown species. He took up the cultivation of Galeandras, receiving an Award of Merit for G. Devoniana in February, 1894, and was attracted by the curious flowers of the genus Catasetum, a fine plant of C. Gnomus being awarded a Botanical Certificate, R.H.S., September, 1893. The distinct Oncidium Marshallianum sulphureum obtained an Award of Merit, April, 1901.

Maxillarias also attracted his attention, and a remarkable specimen of M. luteo-alba bearing 70 flowers is illustrated in the *Orchid World*, iv. 41. Maxillaria Turneri received a Botanical Certificate in April, 1899. Probably one of the finest plants ever cultivated of Bulbophyllum Lobbii colossum was that exhibited by Mr. Cobb at the Royal Horticultural Society's Chelsea Show, July, 1905. It bore about forty finely-developed flowers, and received an Award of Merit, with a Cultural Commendation to his grower, Mr. J. Howes. Hybrids were also much cultivated, and among the early-day favourites was Læliocattleya Hippolyta, the Dulcote variety of which obtained a First-class Certificate in May, 1898.

Mr. Cobb subsequently reduced his collection, but always maintained at his residence at Rusper several houses of interesting species and hybrids. On the completion in 1919 of fifty years' interest in Orchids he was the recipient of many congratulations, and his extensive knowledge was of much value to the R.H.S. Orchid Committee, of which he had been a regular member, his last attendance being at the Autumn Orchid Exhibition, held Nov. 1st, 1921. The interment took place at West Norwood Cemetery, April 22nd.

ROYAL HORTICULTURAL SOCIETY.

March 28th, 1922.

MEMBERS of the Committee present:—Fred. J. Hanbury, Esq. (in the chair), Prince Tadashige Shimadzu, Messrs. Jas. O'Brien, Stuart Low, J. Wilson Potter, A. McBean, T. Armstrong, Fred. K. Sander, R. G. Thwaites, A. Dye, Gurney Wilson, C. J. Lucas, S. W. Flory, R. Brooman White, E. R. Ashton, C. H. Curtis, W. J. Kaye, and J. Barker.

FIRST-CLASS CERTIFICATES.

Sophrolæliocattleya King George (Slc. bletchleyflora × C. King George); from Messrs. Flory & Black. For a hybrid showing the influence of Sophronitis, this flower is unusually large, the sepals and petals rosy-mauve on a yellowish ground, the trumpet-shaped labellum solid ruby-purple. A fine addition to this section.

Odontoglossum Garnet (Amethyst × crispum); from Messrs. J. & A. McBean. A richly coloured flower inheriting the fine blotching of the crispum parent. The broad segments rose-tinted and almost covered with crimson-purple colouring, which shows through on the back of the flower.

AWARDS OF MERIT.

Cymbidium Alexanderi var. Prince Imperial; from Messrs. J. & A. McBean. The spike carried seven large flowers of bright rose-pink colour, the lip whitish at the base and effectively marked with crimson-rose on the front lobe.

Dendrobium Perfection var. gloriosa; from Messrs. Sanders. An elegant plant with many bulbs bearing numerous flowers of bright rosy-mauve colour.

PRELIMINARY COMMENDATION.

Odontoglossum Llewellyn (amabile × Georgius Rex); from H. T. Pitt, Esq. This comparative y young plant carried a single flower of large size, and with the broad petals heavily blotched with purple on a rose-tinted ground. The central area of the labellum reddish-purple and having a varnished appearance.

GROUPS.

Messrs. Sanders were awarded a Gold Medal for an extensive and well arranged exhibit, containing fine examples of Cymbidium Redstart, C. Titania, C. Corncrake, and C. Landrail, as well as several specimen Dendrobiums with an abundance of flowers. Among the Cattleyas were Zephyr (Dowiana × Schröderæ) and the albino Suzanne Hye; Brassavola hybrids included Blc. Pink Pearl, a large and brightly-coloured flower, and Bc. Springtide. The species were represented by a fine plant of Cœlogyne Lawrenceana, Lycaste Skinneri alba, and the curious Bulbophyllum

barbigerum. In the centre was a noble plant of the very rare Arachnanthe Cathcarti.

Messrs. J. & A. McBean received a Silver Flora Medal for an interesting group of white Cattleyas, including several fine varieties of Lc. Eunice alba, Lc. Schröderæ, and Lc. Beatrice. In the centre was a large plant of Oncidium superbiens and two many-flowered plants of On. McBeanianum (macrathum × superbiens), Odontoglossum triumphosum (triumphans × cirrhosum) carried a spike of thirty golden-yellow flowers with red-brown blotching, and there were several richly-coloured Odontiodas.

Messrs. Stuart Low & Co. were awarded a Silver Flora Medal for an attractive group, in which a strong plant of Phalænopsis Schilleriana and the scarce Lælia harpophylla were in prominent positions. Other plants of interest were Bulbophyllum siamense, the pretty Oncidium Papilio, Sarcochilus Fitzgeraldii, various Miltonias, a fine variety of Cattleya Enid alba, the handsome Bc. Cliftonii magnifica, and several good Odontiodas.

H. T. Pitt, Esq., Stamford Hill (gr. Mr. Thurgood), was awarded a Silver Flora Medal for a neatly-arranged group, containing many scarce species and some beautiful hybrids, among the latter being Odontoglossum St. James, with a spike of six unusually large flowers having segments of violet-rose colour margined with white. The curious Bulbophyllum Peachei and Maxillaria lepidota were in the front row, and in other positions were several rare Masdevallias and a selection of the best Odontoglossum hybrids.

Messrs. Hassall & Co. received a Silver Flora Medal for an exhibit of handsome Cattleyas, the best being C. Tityus var. The President, a superb flower of immense size and rich colour. Others were Cattleya Luedde-manniana Stanleyi, a white flower with amethyst-purple markings of the lip, Lc. luminosa aurea, several fine Brassocattleyas, various Cymbidiums, including select varieties of Alexanderi and Pauwellsii, and choice forms of Miltonia Bleuana, as well as vigorous Odontiodas.

Messrs. Flory & Black received a Silver Banksian Medal for a neat exhibit containing several novelties. Cattleya White Queen and Odontioda Clarinda were both attractive, and a fine flower was seen in Bc. Alma, which had been in flower for six weeks. Lc. Yellow Wings had orange-yellow coloured segments, and Cattleya The Bride carried a large pure-white bloom.

Baron Bruno Schröder exhibited Brassocattleya Albata (Trianæ × Bc. Thorntonii), a beautiful pure-white flower; and Cattleya Minnehaha (C. Trianæ The Baron × C. Lady Rowena), a fine albino result.

Pantia Ralli, Esq., showed Odontioda Theresa (Oda. Coronation × O. Dora), with a spike of five flowers streaked with reddish scarlet.

April 11th, 1922.

Members of the Committee present :—Sir Jeremiah Colman, Bart. (in the Chair), Prince Tadashige Shimadzu, Rev. J. Crombleholme, Messrs. Jas. O'Brien (hon. sec.), T. Armstrong, Pantia Ralli, E. R. Ashton, S. W. Flory, Gurney Wilson, F. J. Hanbury, H. T. Pitt, F. K. Sander, A. McBean, R. Brooman White, C. J. Lucas, J. Cypher, J. E. Shill, H. G. Alexander, C. H. Curtis and W. J. Kaye.

AWARDS OF MERIT.

Cymbidium Castor claytonense (insigne × Woodhamsianum), from Rev. J. Crombleholme, Clayton-le-Moors. A well-cultivated plant with a tall, arching spike carrying 20 large cream-coloured flowers, tinged with rose, and bearing reddish lines on the front lobe of the lip.

Odontoglossum eximium Mabel, from Pantia Ralli, Esq., Ashtead Park, Surrey. This is the result of crossing two fine varieties of O. eximium ; the spike carried flowers of rich crimson red, with a narrow white band to all the segments.

Oncidioda Stuart Low (Oncda. Cooksoniæ × On. macranthum), from Messrs. Stuart Low & Co. This plant bore a twining spike with numerous large flowers of golden-red and dark red tints.

PRELIMINARY CERTIFICATE.

Odontioda Pittiæ (Oda. Juliet × O. St. James), from H. T. Pitt, Esq., Stamford Hill. Although this seedling plant is not yet fully developed it showed qualities that allow it to be classed as one of the finest Odontiodas. The single flower had broad sepals, orbicular petals, and a neatly formed lip. All the segments deep-rose ground, heavily blotched with reddish scarlet, and the crest bright yellow.

GROUPS.

Messrs. Sanders were awarded a Silver Flora Medal for a very effectively arranged group containing the rare Pholidota ventricosa, Cymbidium Devonianum, with a pendulous spike of 25 flowers, the scarce Cattleya citrina, Cœlogyne Lawrenceana, several fine varieties of Lycaste Skinneri, well-flowered plants of Dendrobium Cybele and D. xanthocentrum Boreallis, the elegant Od. cirrhosum Pitt's variety, some good Læliocattleyas, and various Masdevallias, of which M. simula, with its microscopic flowers, is always of interest.

Messrs. Stuart Low & Co. received a Silver Flora Medal for an extensive exhibit, in which were the rare Saccolabium calceolare, Dendrobium tortile, C. crassinode album, the richly coloured Slc. Niobe, Slc. Irene, and a very fine variety of Lc. Areca. Lc. luminosa aurea was well represented, and there were also several handsome Odontoglossum hybrids and Oncidium species.

H. T. Pitt, Esq., Stamford Hill, was awarded a Silver Banksian Medal for a very pretty group, containing the scarce Eulophiella Elizabethæ, Epidendrum Endresii, with a many-flowered erect spike, Cirrhopetalum Fascinator, Bulbophyllum Mastersianum, the yellow Dendrobium aggregatum, Miltonia Venus var. Dulcis, having rose-tinted flowers marked with purple, and a fine variety of Lycaste Skinneri alba.

Messrs. Flory & Black received a Silver Banksian Medal for an exhibit, comprising Rolfeara Ceres, the pleasing Slc. Roboris, Cattleya Empress Frederick var. Vesuvius, with four richly coloured flowers, Oda. Prince Albert, of good shape and colour, Oda. Bix, with a many-flowered spike of reddish blooms, Sc. Niobe, and Odontoglossum crispum nigrescens, having round flowers almost covered with blackish blotching.

Pantia Ralli, Esq., exhibited Odontioda Latona Glebe var., with a spike of five large flowers, of yellow ground, with orange-brown markings.

MANCHESTER ORCHID SOCIETY.

March 16th, 1922.

MEMBERS of the Committee present: Rev. J. Crombleholme (in the Chair), Messrs. R. Ashworth, Dr. Bedford, J. Birchenall, A. Burns, A. Coningsby, D. A. Cowan, J. C. Cowan, A. G. Ellwood, J. Evans, W. Giles, Dr. R. N. Hartley, J. Howes, A. Keeling, J. McNab, D. McLeod, F. K. Sander, E. W. Thompson and H. Arthur (secretary).

A Large Silver-gilt Medal was awarded to Mrs. Bruce and Miss Wrigley for an excellent group; and Silver-gilt Medals to Capt. W. Horridge and T. Worsley, Esq., for fine exhibits. Large Silver Medals were awarded to A. Hanmer, Esq., and to Col. Sir J. Rutherford, Bart., for attractive groups. Silver Medals were granted to the Rev. J. Crombleholme and Dr. R. N. Hartley. A Gold Medal was awarded to Messrs. Sanders for a magnificent group.

FIRST-CLASS CERTIFICATES.

Cattleya Dupreana alba, pure white, throat yellow; Od. crispum majesticum, large flower, segments blotched deep-red and margined with white; Od. crispum Ashiæ; Od. Pescatorei var. Rex; from P. Smith, Esq.

Potinara Juliettæ; Lycaste plana Measuresiana; from Dr. F. Bedford.

Od. crispum Brenhilda, a fine blotched variety; Lc. General Allenby; from S. Gratrix, Esq.

Dendrobium Dr. Hartley (chessingtonense × illustrissimum), flowers yellow with dark brown centre to lip; Od. Thwaitesiæ, Hartley's var.; from Dr. R. N. Hartley.

Cymbidium Castor var. St. Mary, large pure-white flowers; from Rev. J. Crombleholme.

Cymbidium Castor var. Bridge Hall, large cream coloured flowers; from Mrs. Bruce and Miss Wrigley.

Odontioda Juno, rose ground heavily spotted with bright red; from A. Hanmer, Esq.

Cymbidium Alexanderi var. Bolholt, a white flower with deep red lines and spots on the lip; from Capt. W. Horridge.

Odontioda Alcantara var. Beardwood, segments reddish-brown margined with white; from Col. Sir J. Rutherford, Bart.

Brassocattleya Albion, flower of good form, white, lip round and fringed; from T. Worsley, Esq.

Læliocattleya Aquitania, Sander's var., large flower of fine shape, sepals and petals mauve, lip deep purple; from Messrs. Sanders.

AWARDS OF MERIT.

Lycaste Skinneri var. Goliath and L.S. var. Delight; from Miss Bruce and Miss Wrigley.

Odontoglossum crispum West Point Monarch; and Odontioda Bright-eye; from S. Gratrix, Esq.

Odontioda Joyce var. Milky Way and Od. crispum Marlind (Marie × Lindenii); from P. Smith, Esq.

Cymbidium Alexanderi var. Rajah; from Capt. W. Horridge.

AWARDS OF APPRECIATION—FIRST-CLASS.

Cypripedium Aure-Euryades var. General Maude; from Mrs. Bruce and Miss Wrigley.

Odontioda Cyclops; from S. Gratrix, Esq.

Odontioda Colinge var. illustris; from Capt. W. Horridge.

Cymbidium Wagtail; from Col. Sir J. Rutherford, Bart.

CULTURAL CERTIFICATES.

Mr. A. Coningsby, for Cymbidium Diana and C. Alexanderi.

April 6th, 1922.

Members of the Committee present:—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, B. J. Beckton, J. Birchenall, A. Burns, A. Coningsby, D. A. Cowan, J. C. Cowan, J. Cypher, J. Evans, W. Giles, Dr. R. N. Hartley, J. Howes, A. Keeling, J. Lupton, D. McLeod, J. McNab, E. W. Thompson, and H. Arthur (Secretary).

A Large Silver-gilt Medal was awarded to S. Gratrix, Esq., for a fine group of Odontoglossums in variety; a Large Silver Medal was given to Mrs. Bruce and Miss Wrigley for an interesting exhibit of various Orchids;

a Silver Medal to the Rev. J. Crombleholme for a group of distinct Cymbidiums; and a similar award to Col. Sir J. Rutherford, Bart., who also exhibited several fine Cymbidiums.

Messrs. Armstrong & Brown were awarded a Gold Medal for a magnificent group, and Messrs. Cypher & Sons received a Large Silver Medal for an attractive exhibit.

FIRST-CLASS CERTIFICATES.

Odontoglossum crispum Royalty, of very fine formation and texture, a Silver Medal being also awarded; Dendrobium Cybele West Point var.; Dendrobium Cybele album magnificum; Blc. Lady Rachael, a large white flower, the lip purple; and Odontoglossum crispum Iron Duke, white with deep red blotching; from S. Gratrix, Esq.

Odontioda Alcazar, deep claret-purple; Odontoglossum crispum Athertoniæ, a fine variety of the Doin type; and Od. Duke of York, deep reddish brown; from Mrs. Gratrix.

Odontioda Cillehani flammea, deep scarlet; Oda. Laura superba, reddish brown; and Od. Llewellyn var. Mrs. Hanmer, reddish purple with rose margin; from A. Hanmer, Esq.

Cymbidium Castor var. claytoniense; and C. Alexanderi var. Imperial Prince, large rose coloured flower; from the Rev. J. Crombleholme.

Cypripedium Alcar, a large flower, the dorsal sepal showing much white; from Dr. Craven Moore.

AWARDS OF MERIT.

Cattleya Irene West Point var.; Od. crispum Cygnet; Dendrobium Mrs. S. Gratrix; and Cypripedium Gold Mohur; from S. Gratrix, Esq.

Slc. Adelina var. Dorabella; from Mrs. Bruce and Miss Wrigley.

Cypripedium Thais Edgemoor var.; from A. Hanmer, Esq.

Cypripedium Olympus var. The Secretary; from Dr. R. N. Hartley.

Cymbidium Elfin; from Col. Sir J. Rutherford, Bart.

Odontioda Henryi; and Cymbidium Castor Orchidhurst var.; from Messrs. Armstrong & Brown.

AWARDS OF APPRECIATION—FIRST-CLASS.

Odontoglossum crispum May Blossom; from S. Gratrix, Esq.

Miltonia Sanderæ var. Painted Lady; from Capt. W. Horridge.

CULTURAL CERTIFICATE.

Mr. A. Burns, for Odontioda Vuylstekeæ and Lycaste Skinneri var. Glory.

Mr. W. Giles, for Od. Domingo de Larrinaga.

Mr. J. Howes, for Cattleya Lady Rowena.

A Silver Medal was given to Miltonia Venus superba, previously awarded F.C.C., exhibited by P. Smith, Esq.

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NOTES.

VANDA SANDERIANA.—From a correspondent in Singapore we have received a photograph of a grand specimen plant of Vanda Sanderiana in full flower, the several spikes carrying a total of over fifty large blooms. This plant was eventually sold to an American visitor for £175.

ANGRÆCUM LEONIS.—The fine example of this species, which has recently flowered in the collection of Sir Herbert Leon, Bart., at Bletchley Park, Bucks, recalls the fact that it was one of the first species to be raised from seed under artificial cultivation. When M. Leon Humblot introduced it from the Comoro Islands, in 1885, he gave several plants to M. Loury, of the Paris Botanic Garden, who found on one of them an almost ripe seed-pod. The seed was carefully sown on sphagnum moss and two little plants subsequently appeared. A. Leonis is botanically an interesting plant. Its leaves are equitant, that is to say, the upper surfaces on each side of the mid-nerve cohere, except at the base, and the blade is then brought into a vertical position.

ZYGOPETALUMS.—The note on Zygopetalums (p. 141) affects a group well represented in Costa Rica, and so seldom seen in good condition under cultivation. It appears to me desirable that they should be grown in good leaf mould, or with a proportion of this. I am sure many of our forest carpets would supply excellent material for this. When well grown they are bulky subjects, and in favour with only the enthusiast who has a very catholic taste in Orchids. Most of ours grow in humid forests, as stated, but Warscewiczella lives under fairly dry conditions. Zygopetalum aromaticum, our best species, so delightfully fragrant, grows in the moist Atlantic zone at from 2,500 to 4,000 feet. Some of the Huntleyas and Kefersteinias are excessively rare, and the latter are hard to keep alive, even for a short journey in Costa Rica itself.—C. H. LANKESTER.

ORCHID HOUSES DAMAGED.—We regret to hear that the Orchid houses belonging to Mr. H. T. Pitt have been damaged by fire. This well-known amateur's garden is in close proximity to the railway, and some sparks from

a passing engine fell on the tiffany blinds and quickly set them alight. The flames spread to other blinds and all the shading material on five houses was destroyed, while no less than a hundred squares of glass were badly cracked with the heat.

OPHRYS SEEDLINGS.—In the neighbourhood of l'Uine, M. F. Denis has a little colony of Ophrys aranifera, some of which he fertilised with Ophrys Bertolonii. The seed was allowed to scatter itself in a natural way, and on April 15th fifty-one hybrids between these two species were seen in flower, as well as a number of plants that will come into bloom next season. Under such natural conditions a large measure of success has been obtained. M. Denis kindly sends a box containing twenty flower spikes from the above plants, and they comprise a very pretty and welcome addition to the genus.

CATASETUM TRULLA.—This species is figured in the *Botanical Register*, 1841, t. 34, where Lindley remarks that he was only acquainted with it from a single specimen brought to him in September, 1840, by Mr. James Rigby, of the Stanhope Nursery, Old Brompton. It bore thirty flowers. "They had a most singular appearance, but it must be confessed not a beautiful one, none of the colours being at all lively. The lip has much the form of a trowel, and is not at all hollowed out into a bag. It is merely concave like the bowl of a spoon." At the meeting of the R.H.S., held April 25th, Dr. F. Bedford exhibited the Dovercourt variety of this species, to which an Award of Merit was granted. The spike carried eight flowers, of similar formation to that depicted in the above plate, but instead of the greenish colour therein shown this variety was of deep maroon purple when viewed by transmitted light. At a distance it looked almost black.

CYMBIDIUMS FROM GLASGOW.—On page 136 of our last issue we noted an interesting series of Cymbidiums from Mr. James Whitton, V.M.H., Director of the Glasgow Parks and Botanic Gardens. Since then two other fine Cymbidiums have flowered. One is a variety of C. Alexanderi (eburneo-Lowianum × insigne), having the large blush white flower composed of white fleshy segments, and with the expansive labellum prettily marked with reddish crimson; the column is rose stained on the upper side and lightly spotted beneath. In the other flower, which is a variety of the new C. Glasgow (eburneo-Lowianum × Alexanderi), the distinctive feature is the deep rose pink colour suffused through all the segments, while the yellow keels on the lip and a suffusion of the same colour on the base of the column present a pleasing contrast. Cymbiums are now very popular, and when cultivated to the fine condition shown in the above examples there is little fear of their popularity declining.

EXPORTING ORCHIDS FROM ENGLAND TO AUSTRALIA.

BY JULIA A. STUCKEY, UNLEY PARK, S. AUSTRALIA.

I SHOULD like to say how much I am interested in the *Orchid Review*. The pages for the less well-informed have recently been helpful and inspiring. To read constantly of the successful growers whose plants thrive as if at home, is rather depressing to the Orchid lover whose Cattleyas do not throw out a shoot or whose Odontoglossums dwindle as with a furnace blast.

Mr. Black has given some very useful hints on the treatment of imported Orchids. May I suggest that he, or some other person as able, should consider if an alteration in the time of exporting is not desirable. In England plants begin to grow in March and April; they go through the season under expert care; flower at the due date; and then in, say September, they are dried off, packed, and posted to Australia or elsewhere. Well, Japan and New York are on the same side of the equator as England, and the plants will arrive at either place in much the same kind of atmosphere as they would have enjoyed in their former locality. But when they arrive in Australia it is November or December—our summer, and instead of resting under genial conditions in the care of experienced men, they have to endure extreme heat, unfamiliar compost, and more or less unskilled cultivation. Many of the plants try to grow, but as the thermometer registers anything up to 108 Fahr. in the shade most of them die. I have seen wrecks of Maxillarias, Masdevallias, Cypripediums, Odontiodas, and many more, which made my heart ache. The pseudobulbs, leaves, roots, all attested to the beauty and vigour of the plants when packed, and many a tiny shoot had raised hopes which the hot and dry air of our summers destroyed without mercy.

Did you not water the stages, floors, etc.? I hear you ask. Certainly, but the water gets hot and tends to rot the plants unless very carefully supplied. In the books one reads of dipping Odontoglossum crispum in water as you pass it. Try it here, and the plant goes. The trouble is that the plant has already gone through its routine of growth, and does not know what to make of four months of heat with brief intermissions of cool days and nights. I have known the thermometer register forty degrees of differing temperature in twenty-four hours. The puzzle to me is that any live, not that some die. What I want to suggest is, send the "cool" and some "intermediate" Orchids to Australia during the English winter or early spring. On arrival, they will then have an autumn and winter so genial that they will know no set-back, but grow as they would have done in their old locality. Vandas, Renantheras, Phalænopses and the like, on the contrary, should arrive in our early summer.

FERTILISATION OF CEPHALANTHERA.

UNDER the above title an article by Colonel M. J. Godfery, F.L.S., is published in the last issue of the *Linnean Society's Journal* (vol. xlv. 511). It is a very interesting account of a primitive form of Orchid, for Cephalanthera not only shows us how cross-pollination was possible before a rostellum had yet come into existence, but it also enables us to form some idea as to how that unique organ first came to be evolved.

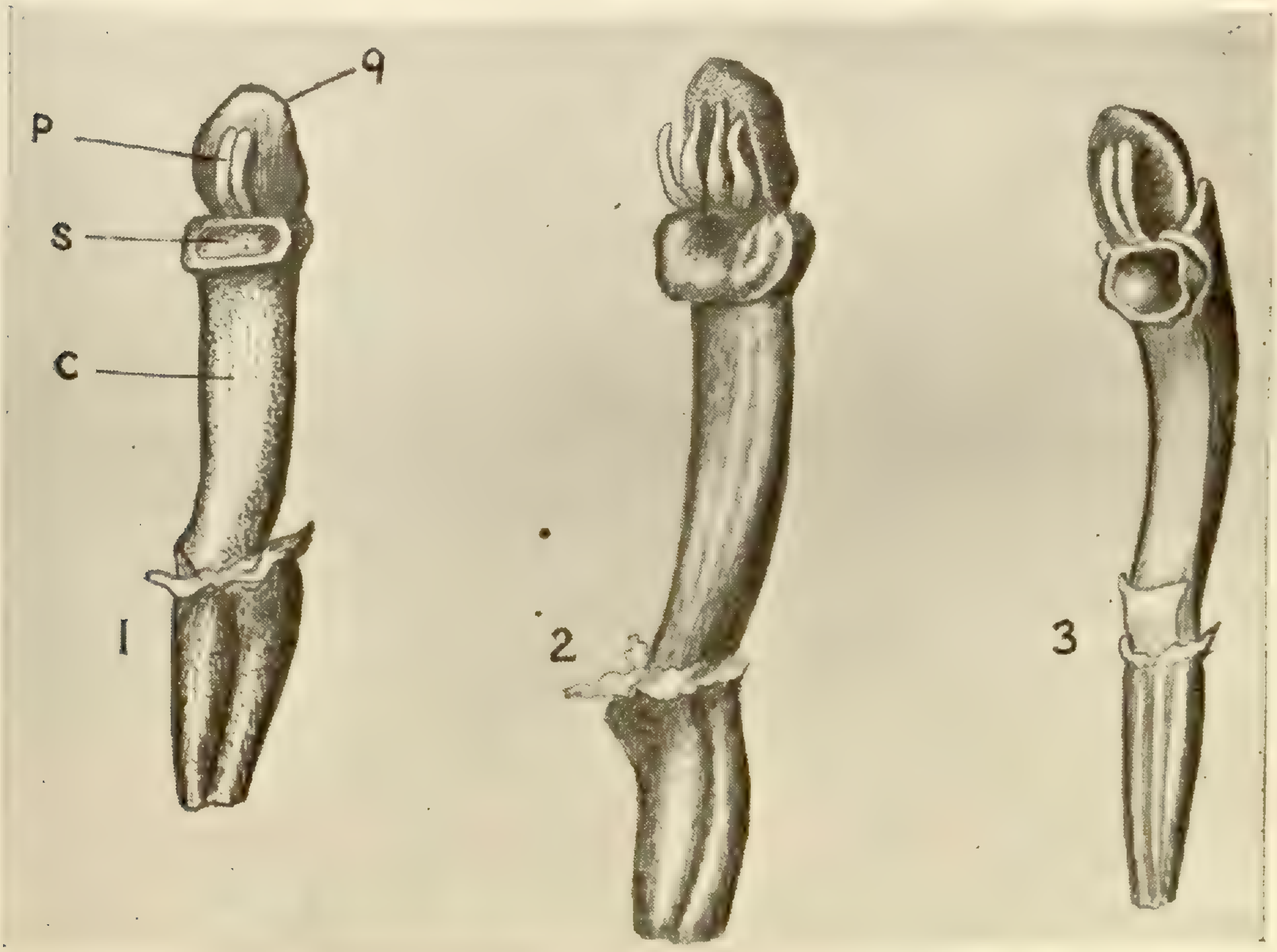
The method by which most Orchids are fertilised is sufficiently well known to require but a brief explanation. Projecting forwards over the edge of the stigma is the rostellum, or viscid gland, to which are attached the pollinia. When a suitable insect visits the flower the rostellum adheres to its head, and thus causes the insect, when leaving, to carry away the pollen. "But when," says Col. Godfery, "we try to find out how Cephalanthera is fertilised, we are met at the outset by an apparently insuperable difficulty—there is no rostellum whatever. The conspicuous flowers are well-suited to attract insects, but there is a complete absence of the usual mechanism for the removal of the pollinia."

Reference is made to Darwin's investigations of the fertilisation of C. grandiflora, and to his belief that Cephalanthera was a degraded Epipactis, that is, an Epipactis which has lost its rostellum, and with it the possibility of cross-pollination by insects. Col. Godfery next gives his observations regarding the anther. "If the anther was pressed back on its hinge, it at once resumed its former position when released . . . . What is the object of this elastic spring-hinge?" Attempts to remove the pollinia by means of a dry camel's-hair brush were unsuccessful, but when the brush was first caused to sweep gently upwards along the middle of the stigma it came out with both pollinia attached. "The object of the elastic hinge now became apparent. The anther must be pressed against the back of the stigma, so that the pollinia may project far enough forward to ensure that an insect, retreating backwards from a flower, after smearing himself with the viscid matter of the stigma, shall also brush against the pollinia. These at once adhere by their convex centres, their ends pointing forwards. It is these projecting ends which come into contact with the stigma of the next flower visited."

Cephalanthera is certainly a very ancient genus, and one which shows us the earliest method of cross-pollination in the Orchidaceæ, before a rostellum had been evolved. That C. ensifolia and C. rubra are both entirely dependent on insects for pollination is proved by the fact that if the flowers are not so visited, no seed capsules are produced. "C. grandiflora *can* be fertilised in this manner," states Col. Godfery, "but this does not seem to happen very often, for it is rare to find flowers from which the

pollina have been removed. It is, however, regularly self-fertilised. How has this come about in a plant whose conspicuous flowers are evidently adapted to attract insects? It is a shade-loving plant, rarely seen except under the shelter of trees, and often growing in deep shadow. In the woods, however, the number of insects of suitable size is much more restricted than in the open. There was thus a danger of there not being enough insects to secure adequate cross-pollination. It has, therefore, acquired the power of self-fertilisation, but it should be carefully noted that this is *in addition to*, not in replacement of, the capability of cross-pollination. It is a parallel case with that of Ophrys apifera, which has supplemented its original faculty of cross-pollination by adding to it that of self-fertilisation."

In concluding this most valuable addition to our knowledge of the fertilization of Orchids, Col. Godfery says: "Cephalanthera presents a case of persistence to the present day of an extremely ancient method of cross-pollination, which possibly prevailed universally in the Orchidaceæ (except in Diandræ) in the remote period before a rostellum had been evolved in that Order."



FRONT VIEW OF THE COLUMN OF (1) CEPHALANTHERA ENSIFOLIA. (2) C. GRANDIFLORA. (3) C. RUBRA.
A. ANTHER, P. POLLINIA, S. STIGMA, C. COLUMN. ALL MUCH MAGNIFIED.

POGONIA AND ITS ALLIES IN THE NORTH-EASTERN UNITED STATES.

ANOTHER interesting volume, forming fascicle VII. of *Orchidaceæ*, is devoted to Pogonia and its Allies in the North-eastern United States and other papers by Prof. Oakes Ames, A.M., F.L.S. It contains excellent plates, and is issued from the Ames Botanical Laboratory, North-eastern Mass., U.S.A. Pogonia when taken in the broad sense consists of a group of rather sharply defined subgenera. The present work deals with the subgenera of Pogonia that come within the range covered by the seventh edition of Gray's Manual, and by means of detailed plates those characters that seem to be most important in considerations of generic segregation of the species are made clear. The subgenera of Pogonia include Cleistes, Isotria, Triphora, and Psilochilus, all of which are members of that large section of the Orchidaceæ which is characterised by mealy or powdery pollen.

The reasons for raising these subgenera to generic rank may be briefly made known by the Summary:—"The pollinia furnish characters of great importance and give three groups of species. Pogonia is first set aside by means of simple pollen grains. The remaining groups have the pollen cohering in tetrads. Triphora comes out because of the reticulated pollen grains and rigidly attached anther, and is sharply differentiated from its allies by means of its vegetative peculiarities and different lip-base. Isotria and Cleistes, characterised in part by the unpitted extine of the pollen, remain. They are separated from each other by means of the foliage. Isotria having five or six leaves disposed in verticils, while in Cleistes the leaves are solitary or alternate. The verticils of leaves in Isotria are of extraordinary interest, as they indicate a line of development that now lacks a parallel in the Orchidaceæ, the nearest approach to it being found in the Antarctic Codonorchis. It is when we consider the significance of verticillate leaves in the evolution of the Orchids that this peculiarity in Isotria assumes deep significance in attempts at generic segregation."

A few words must be said regarding the excellent plates that accompany the above article. They are, we believe, the most complete studies, pictorially, of Orchid species that were ever attempted, and for fidelity to the originals are unsurpassed in the realm of botanical illustrations. F. Bauer, the author of "Illustrations of Orchidaceous Plants," 1830-38, never did more careful work than that seen in plates 102 and 103, depicting Triphora trianthophora. The flowers of this species, however, differs from other New England Orchids in their brief duration. They fade rapidly shortly after the sepals and petals expand, floral perfection evidently being a matter of hours rather than of days. But the labellum is a very beautiful

organ while fresh, the brilliant green raised nerves that traverse the middle form a striking contrast with the whitish disc which seems to be composed of myriads of tiny crystals in piles of unequal density and depth. Plate 110 shows a triandrous form of Psilochilus macrophyllus. The plant came from Grenada, B.W.I., and the gynostemium was triandrous in an interesting way, the supplementary anthers being lateral, one on each side near the base of the stigma. As far as it has been possible to ascertain, a triandrous condition of this plant has not previously been recorded.

OTOSTYLIS BRACHYSTALIX.

AN interesting paper, entitled "Studies of Otostylis brachystalix, and the species with which it has been confused," is included in *Orchidaceæ*, fasc. vii. This plant was originally collected in the Aripo Savannah of Trinidad and described by H. G. Reichenbach in 1861 as Zygopetalum brachystalix. It has had a remarkable history and has given rise to an extraordinary synonomy. Prof. Oakes Ames points out that in recent times it has been confused with Cyrtopodium cristatum, Lindl., and that in 1895, in a brief account of Trinidad Orchids, Patter referred to a white flowered plant under the name Cyrtopodium Grisebachii, Rolfe (*Orch. Rev.*, iii. 276).

In 1914 Rolfe suggested that the species represented Zygopetalum brachystalix, Reich. f., but as the characters were not in conformity with Zygopetalum as now interpreted, he referred it to Aganisia (*Orch. Rev.*, xxii. 200). The plant then came under the notice of Dr. Schlechter, who concluded that it belonged to Koellensteinia, and he therefore made the combination K. brachystalix (*Orchis*, ix. 31, 32). In 1918 Schlechter published his paper on the genus Aganisia (*Orchis*, xii. 24), and therein placed this plant in a new genus under the name Otostylis brachystalix, accompanied by a plate of the plant and flowers. Prof. Oakes Ames also gives a plate of this plant in *Orchidaceæ*, and says that his studies of Otostylis brachystalix led to a close examination of the plant that has passed unchallenged as Cyrtopodium cristatum, Lindl., among Trinidad species. He regarded it as a true Cyrtopodium characterised by small flowers that are usually borne in simple racemes. And now comes the interesting climax. "When," adds Prof. Oakes Ames, "this species is compared closely with the type of Cyrtopodium cristatum collected in British Guiana by Schomburgk it becomes very apparent that the Trinidad species is quite distinct from it. As far as I have been able to ascertain it is a new species, and for it I propose the name Cyrtopodium Broadwayi." Excellent plates of C. Broadwayi and C. cristatum serve to make the difference between these two species still clearer.

ARACHNANTHES.

AT the meeting of the Royal Horticultural Society, held on March 28th, a very fine variety of a remarkable Orchid--Arachnanthe Cathcartii, was exhibited by Messrs. Sanders. The name Arachnanthe is highly applicable to this particular species, as the markings on the inner surface of the segments are peculiarly suggestive of a web.

Though now seldom seen, the whole genus is well worth more attention. Allied to Vanda, and resembling it in habit, A. Cathcartii is distinguished by its tall slender stem, with alternating leaves some six to nine inches long, and from one to nearly two inches broad. The flowers are about three inches across, but larger if forced flat. The fleshy, nearly equal segments, have their inner surfaces thickly covered with transverse, narrow, waved, unequal lines and bars of brick-red, darkening with age, on a creamy-white ground, greenish basally. The backs of the segments are white. The lip, as in the whole genus, is the remarkable feature. Affixed to the extreme base of the column by a narrow thin connection, it oscillates at the lightest touch. The motion resembles that seen in the labellums of Anguloas, but though the restriction caused by the encircling sepals of the Anguloa is absent in this genus, the movement on the whole is not quite so emphatic. The hypochile is thickened, tumerous, and, with the side lobes, is white streaked and lined with crimson. The mescohile is white, but bears two thin crimson lines extending to the epichile which, shaped like the outline of a horse's hoof, has its dull yellow edge so thickened and curved, and with its lateral apices so placed against the mesochile, as to give it a strong resemblance to the frog and surrounding hoof of a horse. The short, stout column, is carried at right angles to the lip.

The distinctive features are equally present in A. Clarkei, which, however, usually flowers in the late autumn. The blooms in this species are rather smaller, borne three to five on a spike, and their colouring is more conspicuous. The petals are slightly narrower than the sepals, but coloured similarly, a yellow ground with transverse bars of dull chestnut, confluent apically. The lip has the same colouration, but in lighter tint. As in A. Cathcartii, it is so attached as to allow it to fall up and down by its own weight, according to the position of the flower. Small ear-like side lobes are bent forward and inward, end the mesochile carries keel-like ridges, which, however, do not extend to the epichile. Though the edge of the latter organ is not so thickened as in A. Cathcartii, it is inclined inward so that the resemblance to a horse's hoof is still well marked. Column short, stout, and white, as are the backs of the flowers.

A third species, A. annamensis, is probably the most striking in the genus. It was introduced by Messrs. Sanders, from Annam, through their

ARACHNANTHE CATHCARTII, AS FLOWERED IN THE COLLECTION OF C. J. LUCAS, ESQ., WARNHAM COURT, HORSHAM.

collector Micholitz, who probably obtained it in the same locality from whence he sent home Cymbidium Sanderæ, Sanderi, erythrostylum, etc. It surpasses both the preceding in the size and brilliant colouring of its flowers. Unfortunately, it is extremely rare in cultivation. A few odd Orchids, unnamed and unclassified, were sent by Micholitz to the St. Albans Nursery to grow and prove themselves. They were seen by Sir Fred. Moore, of Glasnevin, who acquired a few speculatively—and it is a speculation to acquire unflowered Vandaceous plants, for so many have the unhappy faculty of eventually proving themselves to be species of Acampe, Sarcanthus, or other similarly small flowered kinds that are possibly interesting, but not showy. In the following year, 1905, from among the plants purchased, Arachnanthe annamensis flowered, new, large, and handsome beyond comparision with the known species. It is figured in the *Orchid World* (vol. ii., 267), and the photograph shows well the habit. The inflorescence, carried well above the plant, bears eight to ten flowers, which, in colour, may be likened to a brilliant form of A. Clarkei, but more tiger-like in marking and much superior in size. The upper sepal stands erect, the two lower, curved similarly to, and not unlike a scimitar in shape, approach each other at their apices. The petals curve upward and then downward, while the lip, much smaller than in A. Clarkei, and more contracted and pointed, is whitish, marked with purple, and insignificant compared with the other segments.

Very much resembling A. annamensis in shape, but with smaller flowers, a quite different floral coloration, and modification in the lip, is A. moschifera, a species distributed through Malaya. The sepals and petals are greenish white, blotched rather than barred with dark red, the lip rose tipped. The flowers are highly odorous of musk, but not disagreeably so. As in A. Clarkei, the flowers are produced In succession, but more than one is open at the same time. These two species might well constitute a section different to the two preceding.

And yet a third section could be made to include two other species met with in cultivation and which certainly rank among the most wonderful of the Orchidaceæ. A. Lowii, named in compliment to Sir Hugh Low, who first discovered it in Sarawak about the middle of the last century. A giant among Orchids. Under cultivation it will attain a height of from ten to twelve feet, and produce broad dark green leaves twenty-four to thirty inches long, the upper surfaces of which acquire a peculiar brown-purple tint in summer which usually fades in the dull months. From such a robust growing plant, and judging by the other species, a huge panicled inflorescence might be anticipated, but, on the contrary, the comparatively short, stiff spikes of the preceding members give place to a long flexuous pendent raceme, three to four yards long, bearing alternate flowers about

ARACHNANTHE LOWII.

three inches apart on short hairy pedicels. The flowers have about the dimensions, but not the fleshiness, of those of A. Cathcartii. They are richly coloured with crimson red-brown on a yellow ground, the lip resembling that organ in A. moschifera and in A. annamensis, rather than in A. Cathcartii, while it exhibits more yellow than in the sepals and petals. In appearance the flowers are different from the smaller kinds. The curious curves so characteristic of A. moschifera and A. annamensis are absent, the waved segments being more or less flat and nearly equal. Most remarkable are the two basal flowers, which, separated from the remainder by a longer interval, are bright yellow, dotted irregularly and sparsely with brown. In them the segments are perhaps more fleshy than in the remaining flowers, and they are broader and blunter, but there appears no decided difference in their structure, and the operating cause of their colour is not yet known.

Though reaching such large dimensions, the plants flower in a comparatively dwarf state. During the last summer two plants in Messrs. Sanders' nursery little more than two feet high each produced a spike. Naturally, such spikes are not as long as those produced from the huge specimen, for instance, in the collection of the Rev. J. C. B. Fletcher, at Mundham Vicarage, Chicester, which has carried 23 spikes of full length—a curtain of flowers, or from the plant, nearly its equal, grown by Messrs. Sanders in their Bruges nursery in pre-war days; it survived the war, proof of the vitality of the species, but only as a relic.

A. Rohaniana is very similar to A. Lowii, and in all probability is but a variety. As far as can be observed under cultivation, it differs in its slightly more moderate habit, the brighter tints of the flowers, and the fact that there are four yellow basal flowers instead of two. Out of flower, the two forms might easily be confounded, as might the flowers. Nor can the characteristics of the basal blooms be regarded as arbitrary. A. Lowii usually produces only two, but a third and fourth have been noted, and occasionally they have not conformed to either, but have shown a curious colour mixture of the two. A. Rohaniana is said to have flowered in Europe as long ago as 1854, hence its introduction cannot have been much later than that of A. Lowii, probably it was imported as that species. The adjoining illustration is of a fine specimen flowering in the collection of the Rev. J. C. B. Fletcher.

Comparing these two species with the preceding, wide differences, though more superficial perhaps than real, are at once apparent, so much so as almost to entitle them to a separate genus, but the labellums show the connection and transition better than do the inflorescences. In the earlier days, the genus did present a problem to the systematist; it was confused with Vanda and Renanthera, and also placed under the name Esmeralda. The plants known as Cathcartii, Lowii and Rohaniana, have been described

both under Vanda and Renanthera. Moschifera was known as Renanthera Flos-æris and R. arachnites, while Cathcartii and Clarkei, along with Vanda Sanderiana, were placed under Esmeralda, a genus now abolished.

ARACHNANTHE ROHANIANA.

A further species, named Arrynchium labrosum by Lindley, may here be mentioned, though it hardly compares with the previous species in point of beauty. A native of Burma, it bears flowers under two inches in diameter, the segments nearly equal, yellowish, with ruddy-brown markings,

and the lip narrow, recurved and yellow. It is difficult to give an exact position to this plant. Superficially it rather resembles a Renanthera, in which genus it has been included under the names R. billinguis and R. labrosa. Eventually it was transferred to Arachnanthe.

Concerning Arrynchium labrosum, Lindley remarked (*Paxt. Fl. Gard. i.* 142): "The lip is a hollow curved blunt horn, rising from the base of the column with its convexity upwards; on the convexity lies a flat yellow wrinkled fleshy tongue, which seems as if it consisted of two layers; at the base the lip is concave, and has on either side a short truncate ear, with which it clips the column. The column is taper, short, straight, with a nearly circular slope. No known genus can receive this singular plant, unless it is thrown into a crowd of Saccolabes, among which however, it would scarcely be sought, for its thick fleshy lip is very different from the thin membrane found in that genus. Moreover, it is essentially distinguished by its rostel not being extended into a long beak, as is the case in all the genuine Saccolabes and Sarcanths. As for Sarcochilus, which it is said to resemble, that genus is quite different in the long, narrow foot on which the lip is placed, as well as in the nature of the lip itself."

It is at present perhaps better to retain these puzzling plants under one genus. Later, the hybridist may help to solve their affinity one to another, for the fact that two species of two so-called different genera interbreed should go far to show their close relationship. The fact that the plant known as Vanda Sanderiana was included with Arachnanthes under Esmeralda, and then relegated to Vanda, can be taken as proof of a resemblance to both genera. Now it constitutes the type species of a new genus—Euanthe—as it differs from both Vanda and Arachnanthe. The interesting note in the *Orchid Review*, p. 2 of the present volume, gives it under its new generic name, but, as the parent with Vanda tricolor of a hybrid, it is evidently closely allied to Vanda.

Whether hybrids will or will not be obtained between the different species of Arachnanthe, or between that genus and Vanda, its nearest ally, remains to be seen. Such hybrids do not occur in nature, as far as is known, for each species is not only localised, but is apparently highly specialised to attract and allow only certain kinds of insects to fertilise them. The labellums of A. Cathcartii and A. Clarkei, so decidedly motile, certainly give rise to conjecture. Their modest colouring may be an attraction against the brighter colours of the other segments; their motion, for they move under the influence of an impinging wind, might also attract. Their movement is very different to the action in Bulbophyllums, in which genus the lip impels the visiting insect against the pollinia. But here the whole lip would be depressed by the weight of a moderate sized insect and so render access to the stigma apparently more difficult. Undoubtedly

there is a solution to the problem, but the key can probably only be gained by observation under natural conditions. Certainly there must be a reason for such abnormal structures.

As regards the culture of Arachnanthes, no great difficulties are presented. They enjoy a warm, moist atmosphere, but do not require the great heat given them in the early days of Orchid cultivation. Given treatment similar to the warmer growing Aërides, Vandas, Cypripediums, etc., success should follow. A. Clarkeii hardly requires the heat accorded Vanda suavis, but in each case careful watering is necessary in the dull months.

A. annamensis was awarded a First-class Certificate in 1906. A. Cathcartii in 1873, and a dark flowered variety, known as grandiflora, a First-class Certificate in 1894. A. Lowii obtained a similar award in 1896, and A. Rohaniana in 1907. A. moschifera received a Botanical Certificate in 1894. A. Clarkeii has apparently never received an award, but it should be worth recognition, while A. moschifera, in consideration of its really extraordinary shape, its floral attraction and scent, deserves a second judgment.

E.C.

THE AMATEUR'S PAGE.

AN amateur whose business frequently keeps him away from the garden during the greater part of the day mentions the difficulty experienced in keeping the Orchid house sufficiently damp during his absence. "However much I damp down early in the morning, does not seem sufficient for the middle of the day, for as soon as the sun is powerful away goes all the moisture." Such, we feel sure, is the experience of other amateurs who do not employ a man in constant attendance.

It does not occur to every amateur that the path, as well as the ground beneath the staging, is in any way connected with the cultivation of the plants above. But a little consideration will convince anyone of the importance of this matter. There is much diversity in the design of the glass structures seen in amateur's gardens: some are constructed in an open space, where little or no shade is produced by adjacent buildings, while others are attached to the dwelling-house, and are consequently of a heavier type, and generally described as conservatories. It is in this last mentioned type of house that greater difficulties are experienced, not only in producing a suitable atmosphere, but in maintaining it, for there are various factors that tend to counteract the desired conditions.

Most houses of the conservatory type have the greater part of the floor paved with glazed tiles. These, it is true, are very nice to walk upon when dry, and are easily kept clean, but being non-porous they do not assist in

producing that genial and moist atmosphere so essential to the welfare of the plants. Of course, a floor of this kind can be flooded with water, which is then unpleasant to walk upon, and it can be frequently damped, if anyone is home to carry this out, but in either case tiles dry very quickly. So detrimental have these glazed tiles been found in some houses that their entire removal has been effected, and porous bricks have been placed in their stead. A modified plan may, however, be adopted by removing the tiled floor from under the staging and making there a bed several inches thick of clinkers and broken coke. The tiles in the centre of the house are left as a pathway. Where several Orchid houses are in use, the conservatory is often kept as a show house for plants in bloom, and in this case the atmospheric conditions are not quite such an important item, for during the period of flowering new growth is rarely being made.

Considering the greenhouse built expressly for growing plants, every means must be used to assist the growth by maintaining at all times a suitable atmosphere. And here a lesson may be learnt from the nurseryman, who perforce must study economy. He uses all the waste material from the stokehole for repairing the paths. Almost every week fresh ashes are scattered over the surface, so that in a short time there is a sufficient depth of porous material which, when charged with water, keeps the air almost saturated with moisture.

No precise amount of atmospheric moisture can be stated; very much must be left to the intelligence of the cultivator. While the majority of Orchids delight in considerable atmospheric moisture during their period of growth, there are a few which succeed better under somewhat drier conditions. It has already been said that the nurseryman keeps his houses very moist, but while he on this account obtains successful results with almost all his plants, it is not always so with regard to Odontoglossum grande. It is a noteworthy fact that many of the finest specimens of this Guatemalan species have been produced in amateur's houses, and this is no doubt due to the comparatively drier conditions there prevailing. Should any amateur desire to cultivate only this plant, and the very few others that like similar conditions, then the conservatory type of house may meet all the requirements. The majority of amateurs, however, are very fond of the Colombian type of Odontoglossum, including such popular plants as O. crispum and its many hybrids, and for them much moister conditions are desirable. Cymbidiums and Cypripediums are both very popular, and while not requiring high temperatures, a moisture-laden atmosphere is for them very essential. One must always bear in mind the fact that plants of the latter genus do not possess pseudobulbs in which reserve food and moisture can be stored and subsequently made use of when necessity arises. Hence a long period of drought is to them a serious matter.

THE R.H.S. SPRING SHOW OF 25 YEARS AGO.

TWENTY-FIVE years ago the Royal Horticultural Society, held its tenth Spring Show in the Temple Gardens. Of all the floral events of the year the Temple Show was considered by far the most important, and horticulturists from all parts of England, as well as from the Continent, visited it in large numbers. The enthusiasm then was quite as great as that witnessed in the more recent and much larger shows held at Chelsea. How considerable has been the advance made in the breeding of Orchids is not always realised by the younger generation of amateurs. They admire the hybrids as they see them, and not as improvements on the original forms. But anyone with upwards of twenty years' experience will readily agree that vast strides towards the perfection of the hybrid Orchid have been made, and that the future will see still further advances.

Well, let us go back to the Temple Show of 1897. The President of the Society, Sir Trevor Lawrence, Bart., exhibited a selection of rare species from his celebrated collection, among them being the charming Epidendrum Endresii, with its descendants E. endresio-Wallisii and E. elegantulum. Odontoglossum excellens, a natural hybrid between Pescatorei and triumphans, was a feature of the group, for artificially raised hybrids in the genus were then almost unknown. Sir Fred. Wigan and Baron Sir H. Schröder also exhibited fine groups, but the only Odontoglossum hybrids contained therein were varieties of O. Wilckeanum and O. Andersonianum, both of which were obtained from importation of O. crispum from Colombia. But O. Wilckeanum when well grown is quite a showy thing, as was proved by the two plants of it in Mr. W. Thompson's group with sixteen and twenty flowers, respectively. This Staffordshire exhibitor also staged a fine variety of O. excellens, and to which an Award of Merit was given. An amateur from still further north was Mr. F. Hardy, of Ashton-on-Mersey, who exhibited a splendid variety of Cattleya Schilleriana, which received a First-class Certificate. Mr. E. Ashworth, of Harefield Hall, Wilmslow, received a similar award for L. purpurata Ashworthiana, while an Award of Merit was given to L. purpurata fastuosa shown by Mr. A. Warburton, of Haslingden. Another well-known amateur exhibitor was Mr. R. Ashworth, of Manchester, who staged Odontoglossum excellens, which obtained an Award of Merit, while from the same district Mr. T. Statter showed Cypripedium conco-bellatulum, and received a similar award. The Duke of Sutherland sent from Trentham, a grand form of O. crispum, with a spike of thirteen flowers, the largest four and a half inches across. But where are these northern exhibitors to-day? True, they have the Manchester Orchid Society near at hand, but their exhibits would be greatly welcomed in London. Let us hope when normal

times return, the R.H.S. will again be favoured with their much appreciated rarities and novelties.

Among the trade growers' groups, were fine exhibits from Messrs. Sanders, who included a beautiful specimen of Cattleya Mossiæ Reineckiana with 13 flowers, and a specimen of Stenoglottis longifolia with 40 spikes. Messrs. Charlesworth showed interesting hybrids, of which Læliocattleya Canhamiana (Lc. purpurata × C. Mossiæ) received a First-class Certificate. Messrs. Low & Co., obtained a similar award for Odontoglossum crispum Queen Victoria, as well as a Botanical Certificate for Cœlogyne asperata. Mr. J. Cypher exhibited a series of fine varieties of Lælia purpurata, and Messrs. Lewis & Co. staged examples of showy species. Messrs J. Backhouse & Son and Messrs. B. S. Williams also put up interesting groups. Among the continental exhibitors, M. Jules Hye exhibited fine forms of Miltonias, while Messrs. Linden, M. Peeters, and M. Piret staged various varieties of well-known species. At this show Messrs. Veitch & Sons exhibited their first hybrid Spathoglottis, derived from S. aurea and S. Vieillardii. It would be very interesting if a group composed only of plants that were in existence twenty-five years ago could be staged. The great change that has taken place would be apparent to one and all, and serve not only as a reminder of the past, but as a stimulus to further progressive work.

With the early type of spring-flowering hybrids, there was much sameness regarding the Cattleya section. Lælia purpurata and Cattleya Mossiæ were the chief species seen in flower, and both were made use of by the hybridists to a large extent. The results yielded a series of hybrids in which the dorsal sepal stood up far separated from the other segments of the flower, while the drooping habit of the petals of C. Mossiæ also tended to give the flower a weak appearance. Of late years much has been done to remedy this defect, although the results are not as yet equal to the autumn-flowering hybrids.

The showy hybrids of to-day have in many instances replaced the interesting species of the past. This may be only passing fashion, and there are already signs that the species upon which so much has been written are again coming to the front. The late Sir Trevor Lawrence exhibited many little rarities that are not now in cultivation, and, indeed, he also showed some truly remarkable plants that, if they could be again discovered and imported successfully, would prove very stimulating to all amateurs botanically inclined.

The Orchid Committee in the past had more to do with considering the meritorious points of species, and the large numbers of them then seen in flower gave greater opportunities for a more correct judgment that is perhaps possible to-day.

But it is to the Odontoglossum section that we now look to so much for the supply of spring flowers. Hybrids there are in this group that vary from white to almost black, from cream yellow to deep orange, and from bright scarlet to dark chocolate. Blue is at present, and seems likely to be, the one deficient colour. Twenty-five years ago Cochlioda Nœtzliana made a few small specks of colour, but simply nothing to the masses of scarlet flowers seen at the present time on hybrids derived from it. It seems but yesterday that the first Odontioda made its appearance, although the exact occasion was the Temple Show of 1904. No one anticipated such an extensive series of results from this comparatively insignificant species.

AN AMATEUR'S EXPERIENCE.

By JOSEPHINE WALKER.

THE article in last month's issue on the growing of Orchids in conservatories, or any other glasshouse that happened to be available, provided it had some sort of heating arrangements to keep out the frost in winter, has brought a letter from another enthusiastic amateur, which, I think proves, even more than our experiences, that it is possible, provided the enthusiasm and love of the plants is there. I should like to quote the greater part of the letter because it is a great achievement, and shows what can be done with species, which, in this case, are all imported direct and have to be established, not at any time an easy matter for the amateur, as a mistake in the early days is often fatal, especially if the plants have travelled badly. The following is the gist of the letter:—

"I see you wish to encourage amateurs to grow Orchids, and I wonder if my experience will interest you. I have one glasshouse on the north side of my dwelling house, which gets hardly any sun in winter until 1 p.m., and yet I manage to grow and flower the following varieties: Vandas cœrulea, cristata, cœrulescens and Bensonii; Cattleyas Gaskelliana and citrina; Oncidiums Marshallianum, cheirophorum, Papilio, varicosum Rogersii and ornithorhynchum; Cœlogynes cristata and ochracea; Dendrobiums Pierardii, crystallinum, fimbriatum, lituiflorum, crepidatum, amœnum, densiflorum, ochreatum, infundibulum, Jamesianum, Wardianum, nobile, chrysotoxum, primulinum, Falconeri and Devonianum, the latter with a hundred flowers on one plant. In addition to these there are Aërides Vandarum, Bulbophyllum Careyanum, Thunia alba and T. Marshalliæ, Epidendrum vitellinum, Pholidota imbricata and P. articulata, Cymbidiums Parishii, Lowio-eburneum, pendulum, giganteum, Hookerianum and

Tracyanum, the following Odontoglossums, Pescatorei, Rossii majus, crispum and triumphans, as well as various Cypripediums."

This is truly Some List, as the Americans say, to tackle in one house, because the plants appear to me to range from the hottest to the coolest. I have received an invitation to go down and see them. I shall be very interested to know how it is done.

I thought our collection was all in order for the year, but, alas, there has been an upheaval. My husband was tempted to bid at a recent sale for some 120 seedling Læliocattleyas and Sophrocattleyas, and we obtained them at an exceedingly low price. They are mostly four years old and appear to include several albinos. They were in 2½-inch pots and ready for a shift. I should think many of them would bloom this year, so we have something to look forward to for a long time. The raising of seedlings always appealed to me as a very fascinating side of the cult, but I did not think we should ever aspire to it, nor am I anxious now to do so if such opportunities as this occur to acquire plants at so low a figure. It only again goes to show that the long purse is not necessary, unless one wishes to possess the latest and finest things that come along.

To make room for the new family we have had to part with some of the Cypripediums, and these have helped to make up a consignment for abroad. We repotted the whole of the new lot. They needed it badly. In less than three weeks they are rooting splendidly and apparently enjoying their new surroundings. One of the largest trade raisers and growers was over to see us the other evening, and he said they looked a very promising lot. He picked out two that he said looked quite distinct.

My husband and I always take an opportunity of going through the trade collections, and we have received much good advice and encouragement from the professionals. They know quite well that as far as financial business is concerned we are not of much value to them, but that does not seem to weigh at all with them. If one is an enthusiast and shows some intelligence in the cult they will be kindness itself in helping anyone by giving all possible advice. When one gets a man walking through your little lot who has spent his life amongst Orchids, with a hint here and a friendly criticism there, it makes a world of difference. Such has been our experience, and we are grateful for the kindness shown.

We are trying for a few Cymbidiums at a sale this month, but I am afraid they will fetch above our prices, for a dealer told us the other day that Cymbidiums were now the fashion, and I am not surprised, for I know no Orchid which is of so easy culture and gives such splendid results, whilst the spikes of bloom, in addition to the beauty and size, for decorative work possess wonderful lasting qualities. I have had them last for five weeks in a vase in the cool drawing-room.

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR.
Brassocattleya Conqueror	Bc. Oberon × C. Maggie Raphael ...	Baron Schröder.
Brassocattleya Invicta	C. Octave Doin × Bc. Digbyano-Mossiæ	Stuart Low.
Brassocattleya Springtide	Bc. Mad. Chas. Maron × C. Monica ...	Sanders.
Cattleya Hilda	C. Dietrichiana × C. aurea	Pantia Ralli, Esq.
Cattleya Minnehaha	C. Trianæ × C. Lady Rowena	Baron Schröder.
Cymbidium Pyrrhus	C. Wiganianum × C. Holdfordianum ...	W. Walters Butler, Esq.
Cymbidium Puck	C. roseum × C. Alexanderi	W. Walters Butler, Esq.
Cypripedium Alcar	C. Alcibiades × C. Carola	Dr. Craven Moore.
Cypripedium Amberley Gem ...	C. Earl of Tankerville × C. Formidable ...	H. Green, Esq.
Cypripedium Gloss	C. Thompsonii × C. Desdemona	P. Smith, Esq.
Cypripedium Ionian	C. Troilus × C. Eurybiades	S. Gratrix, Esq.
Cypripedium Ivanhoe	C. Mrs. Hayward × C. Gaston Bultel ...	H. Green, Esq.
Cypripedium Upton Gem	C. Idina × C. Alcibiades	Flory & Black.
Cypripedium Zoroaster	C. villosum × C. Earl of Tankerville ...	Mrs. Bruce, Miss Wrigley
Dendrobium Dr. Hartley	D. chessingtonense × D. illustre	Dr. Hartley.
Dendrobium Enchantress	D. Sybil × D. nobile	Sanders.
Epicattleya Pentomos	E. pentotis × C. Mossiæ	Mons. F. Denis.
Læliocattleya Alpha II.	Lc. warnhamensis × L. Cowanii	Mrs. Bruce, Miss Wrigley
Læliocattleya Aquitania	C. Enid × Lc. Britannia	Sanders.
Læliocattleya Areea	Lc. General Maude × C. Enid	Stuart Low.
Læliocattleya Bellissima	C. Trianæ × L. autumnalis	Sanders.
Læliocattleya Luminous	C. Adula × Lc. luminosa	Sanders.
Læliocattleya Oriana	Lc. Smilax × C. Mossiæ	Stuart Low.
Læliocattleya Sunglow	Lc. Ernestii × C. Suzanne Hye	C. J. Lucas, Esq.
Læliocattleya Wish Wynne	C. Mossiæ × Lc. bellata	Flory & Black.
Odontioda Cissie	Oda. Lambeauiana × O. King Arthur ...	McBean.
Odontioda Majestic	Oda. Coronation × O. majesticum ...	Sanders.
Odontioda Pittiæ	Oda. Juliet × O. St. James	H. T. Pitt, Esq.
Odontioda Ultor	O. Othello × Oda. Charlesworthii ...	Stuart Low.
Odontioda Venus	Oda. Coronation × O. Aglaon	Armstrong & Brown.
Odontoglossum Llewellyn	O. amabile × O. Georgius Rex	H. T. Pitt, Esq.
Odontoglossum Madge	O. splendens × O. triumphans	Sanders.
Odontoglossum Royalty	O. Rolfeæ × O. Royal Monarch	Sanders.
Sophrocattlælia Argonaut	Lc. Tunis × Sl. Orpetti	Stuart Low.

EPICATTLEYA PENTOMOS.—From M. F. Denis, Balaruc les Bains, France. We have received flowers of an interesting hybrid between Epidendrum pentotis and Cattleya Mossiæ Wageneri. As in the majority of Epicattleyas, some twenty-three in number, the strong influence of the Epidendrum parent has produced a flower that shows much of the latter's characters and but little of the Cattleya. In fact, at first sight of the flower one might doubt the use of the second parent in its production, but M. Denis remarks he made the cross himself and is quite certain of the parentage. The plant has flowered regularly during the last ten years, but does not appear to have been previously named. The present spike carried three flowers, each 2½ inches across, of light greenish yellow colour, the sepals and petals lined and stained with dull crimson, the labellum heavily marked with broader lines and veins of rich crimson. In 1907 M. Denis flowered Epicattleya balarucensis (C. labiata × E. eburneum).

AËRIDES.

THE essential characters of Aërides are briefly:—The sepals are spreading, the lateral two broader than the upper one, and adnate at their base to the foot of the column. The petals are similar to the upper sepal, rarely different. The labellum is affixed to the foot of the column, is three-lobed, and produced into a spur that is usually turned upwards on the back of the labellum. The column is short and thickish, produced more or less at its base into a foot; the anther is beaked.

In a wild state the Aërides affix themselves to the trunks and branches of living trees, rarely to dead and prostrate ones. The young plants are usually erect or ascending, and emit from their base numerous cord-like roots that creep over the bark or along the cracks and crevices of it, clinging to the tree with extraordinary tenacity, and holding the plants so firmly as to enable them to resist any of the ordinary force of Nature that would affect their stability or cause their displacement. As the stems continue to lengthen, adventitious roots are constantly produced from the preceding year's growth, which attain a great length, frequently branch, and become pendent by their own weight. These roots thence form in time a tangled, cord-like mass that cannot be aptly compared with any phase of vegetation seen in our climate. The annual lengthening of the stem is well marked by the foliage, which in a wild state is of biennial duration; the roots, too, that are farthest removed from the foliage gradually cease to perform their functions and die off. The inflorescence is produced from the axils of the leaves of the preceding year, which begin to wither in the short, dry season that ensues after the growth of the current year is completed. As the stem of an Aërides lengthens by successive yearly growths it gradually deviates from its ascending position, first becoming more inclined, then taking a horizontal direction, and finally by its own weight and the weight of its appendages it is brought into almost an inverted, or, if near enough to the ground, a prostrate position, when its further lengthening is checked or even arrested by the obstacles it encounters. Nevertheless, the stems of Aërides are virtually interminate, they would continue to lengthen indefinitely if no physical obstacles or checks intervened. Stems have been observed from 15-20 feet long, but long before that length has been attained young shoots spring from the base of the parent stem, which in time become independent plants; the stem also produces lateral shoots when a fracture has occurred, or when growth at the apex has been arrested by some physical cause. As the leaves wither the stem becomes lignified, sapless, and gradually loses all signs of life beyond a certain distance below the foliage; probably the life of no part of the stem under the most favourable circumstances exceeds five years.—*Veitch's Manual of Orchidaceous Plants.*

CULTURAL NOTES.

BY J. MACKAY, ORCHID GROWER TO JAMES J. JOICEY, ESQ., THE HILL, WITLEY, SURREY.

THE increase of sunlight during the last few weeks has had a beneficial effect on Orchids generally. The majority of our plants are in active growth, and it will be necessary to devote our energies during the next few months in promoting healthy growing conditions, and to make the most of the short growing season. The temperatures during the next month or two will be readily maintained without the aid of much fire heat, although this should always be available in case of sudden cold changes. It is well to remember that the temperatures and the condition of the atmosphere are important items in procuring healthy growth and ripened pseudobulbs. If these are well regulated by judicious ventilation and shading, the plants kept clean, and the compost in good condition, robust and healthy growth will be the desired result. It is somewhat difficult to lay down any hard or fast rule, as conditions vary more or less in different localities, and it is these conditions which have to be studied with regard to plant houses, up-to-date, or otherwise, and to adopt a treatment in accordance with them. The successful grower is one who studies his plants in this way, and will not be satisfied until the required details for each particular plant to be grown have been carried out.

ANŒCTOCHILUS and the allied genera MACODES, HÆMARIA, and GOODYERA constitute a very beautiful group of variegated Orchids. They are grown chiefly for their singularly rich and beautifully marked foliage. Although not so popular to-day as years ago, I saw a few pans recently, and a short note on their requirements will not be out of place. As regards cultivation the plants are not difficult to manage, being of dwarf, compact habit, they are best grown in shallow pans in a compost of sandy peat and sphagnum moss with broken charcoal intermixed. Put several plants in a ten or twelve-inch pan and cover with a bell-glass, which helps to set the plants off to advantage and greatly increases the delicacy and richness of the foliage. They should be grown in the warmest house, and air given them by tilting the glass one or two inches daily; keep them shaded from the direct rays of the sun. Give a sharp look out for attacks of red-spider or thrip, otherwise the foliage will soon be disfigured. A good time to repot is the end of February or beginning of March, and it is best to repot them every year.

MEXICAN LÆLIAS, such as L. ANCEPS and varieties, together with L. AUTUMNALIS and L. GOULDIANA, are now growing freely, but, like a good many more Orchids from the cooler regions of Mexico, they have been doomed to slow but certain destruction through keeping them too hot and

group measuring sixty-three feet in length with a depth of six feet. In the centre and at each ends were banks of the snow-white Odontoglossum crispum and its hybrids, while in another portion were scarlet Odontiodas, and a mass of the pretty Vanda teres. Centres of attraction were formed by a superb plant of Brassocattleya heatonensis, with eight large canary-coloured flowers, and a fine specimen of Bc. Digbyano-Mossiæ with a similar number of greenish-white flowers. A wonderful Odontoglossum named Purple Emperor, and the rare Cattleya Lawrenceana var. Mary Regina, were in prominent positions. Miltonias of the vexillaria section comprised many of the handsomely blotched varieties, and among the new Odontonias was a pleasing deep-rose flower named Merope. Cœlogyne burfordiensis carried a spike of sixteen greenish flowers, Lycaste gigantea was well flowered, and the rare Vanda suavis pallida also came in for due appreciation. Some good varieties of the useful Læliocattleya Fascinator and numerous other hybrids of this combination showed to advantage.

Messrs. Stuart Low & Co. received a Silver Cup for an extensive exhibit containing fine batches of the bright orange-coloured Læliocattleya G. S. Ball, which is still a favourite hybrid. An interesting plant was seen in Lc. Luminosa aurea, and several fine albino Cattleyas gave a light effect to this group. Odontioda Eileen, with four flowers of excellent formation, and rose tinted with reddish blotching, just missed getting an award. Among the excellent Dendrobiums were Thwaitesiæ Veitch's variety, while the Oncidiums included macranthum, with its hybrid McBeanianum, and a wide selection of the smaller golden-yellow species. An unexpected hybrid appeared in Cattleya Dusseldorfei Aquinii, produced by using the Aquinii variety of C. intermedia, the petals carry forward this well-known peloriate marking. Two gorgeous hybrids were seen in Blc. Jupiter var. His Majesty, and in the Jarvisbrook variety of the same. Bc. Triune carried two grand flowers of rose-purple tints.

Messrs. Sanders were awarded a Silver-gilt Flora Medal for a superb group containing numerous rare species, foremost among them being the albino variety of Aërides virens and choice forms of Phalænopsis amabilis. In the centre was a grand plant of Ansellia congœnsis, with three spikes carrying a total of 170 reddish-brown flowers, the lip yellow. In another position was Cyrtopodium punctatum, with tall, many-flowered spikes. Angulocaste Vesta (A. Clowesii × L. Lawrenceana), and Angulocaste Sanderæ, with straw-yellow flowers, were of interest. A pleasing effect was made by finely-flowered plants of Cattleya citrina, the yellow blooms of which hung down over a bed of green moss. Odontoglossum crispum Odin carried a spike of seventeen crimson-blotched flowers, and some fine Cymbidium hybrids had many spikes of bloom. The Rosslyn variety of Lc. Canhamiana had five richly-coloured flowers, while the Cattleyas

were represented by the Goldcrest variety of C. Tityus and C. Magali Sander.

Messrs. Cypher & Sons received a Silver-gilt Flora Medal for a wide selection of species and hybrids. Along the back row were several plants of Epidendrum gattonense, which had continued to produce orange-red flowers on the same spike for the last twelve months. Dendrobium Falconeri, growing on small rafts, was effective, the pendulous slender bulbs bearing brightly-coloured blooms. A grand plant of Selenipedium macrochilum carried six well-developed flowers, the ribbon-like petals of which were frequently commented upon. Cypripedium Maudiæ and Fowler's variety of C. Rossettii were unusally fine. A large specimen of Maxillaria luteo-alba was noticed, as also were four exceedingly well cultivated plants of Bulbophyllum barbigerum, with its spikes of ever-moving flowers. Cymbidium Devonianum was in fine form, and a grand specimen of Brassocattleya Digbyano-Mossiæ carried eleven excellent flowers.

Messrs. J. & A. McBean received a Silver-gilt Flora Medal for an exhibit of very choice Odontoglossums, among them being O. Arabic (eximium × Midnight), with four dark purple-coloured flowers, the shrubbery variety of O. illustrissimum, with twelve claret rose-coloured flowers, and O. Rosina variety Princess, a heavily blotched flower of much merit. Along the back were some interesting Cymbidiums, and in the front an example of Miltonia vexillaria G. D. Owen. Cattleyas were represented by a richly-coloured variety of Empress Frederick, and the numerous Odontiodas included O. Cheringes, of bright reddish-rose, and O. Radiant, which secured an Award of Merit. A fine example of cultivation was seen in Odontoglossum Lilian (Dora × Empress of India), with a spike of seventeen large flowers, of rose colour with claret-purple markings.

Messrs. Armstrong & Brown staged a group, "Not for Competition." Each plant showed to full advantage in its allotted space, the staging being covered with a bed of dark green moss. In the centre was Brassocattleya Dietrichiana, Orchidhurst variety, with a richly-coloured flower, the lip having rose-purple tints round the margin. Odontioda Henryi carried a spike of twenty-three light, orange-tinted flowers, and the Odontoglossums included a fine hybrid between Mars and eximium, as well as Conqueror and crispum xanthotes. At the back was Cymbidium Lowgrinum, with a very dark lip, and near the front were some fine varieties of Cattleya Dusseldorfei, Læliocattleya Hyeana and Lc. luminosa.

Messrs. Flory & Black were awarded a Silver Banksian Medal for an interesting group of new hybrids, as well as fine forms of the older ones. Læliocattleya S. W. Flory was very promising, and Lc. S. O. Stephenson, three fine plants of which were staged, showed an advance on the much older Lc. Dominiana. Rolfeara Atreus, a new cross between Sc. Atreus

and Bc. Mrs. J. Leemann, showed to advantage, and in the centre was a fine example of Blc. Rumania, a large white flower, having a purple streak in the centre of the lip. Albino Cattleyas were strongly represented, the best being seen in Irene, Cowaniæ, Brenda, and varieties of Mossiæ.

Messrs. Mansell & Hatcher received a Silver-gilt Banksian Medal for a well arranged group containing many fine hybrids. Among the best were Læliocattleya Hyeana, with richly-coloured lips, several varieties of the pretty Lc. Fascinator, Odontioda, Coronation, cream coloured with reddish blotches, occupied the centre, and around it were other good forms of this popular section. Lælia purpurata Queen Alexandra, white with light veining on the lip, and Cypripedium Curtisii Sanderæ were well staged. A light pink variety of Cattleya Skinneri, the curious Cœlogyne pandurata, and blotched Miltonias were in prominent positions. Odontoglossums were well represented by Conqueror, a fine large white flower, lightly spotted.

Mr. Harry Dixon received a Silver Banksian Medal for a group containing some excellent Brassocattleyas, those known as Veitchii, Queen Alexandra and Empress of Russia being in fine form. Several handsome varieties of Cattleya Mendelii, good examples of Cypripedium Maudiæ, and some fine Odontoglossums were effectively arranged. The central area was tastefully filled with various Odontiodas.

G. Geale, Esq., Wandsworth, exhibited Brassocattlælia Triune, a large flower of pleasing rose-tint colour, the expansive lip freckled with purple.

Mons. Vuylsteke, Belgium, staged Odontioda Favourite, with a spike of seven rose-red flowers, Oda. Brilliant, reddish scarlet, and Oda. Antigone, effectively marked with rose-scarlet.

FIRST-CLASS CERTIFICATES.

Odontoglossum Faustina (Dora × eximium); from J. J. Bolton, Esq., Claygate, Surrey. A beautiful hybrid, in which the spike bore six large roundish flowers, all the segments well proportioned, and with a rose-tinted ground blotched with reddish purple.

Odontoglossum Purple Emperor (Dusky Monarch × The Czar); from Messrs. Charlesworth & Co. One of the finest hybrids of this genus yet seen; the spike carried three immense flowers of rich crimson-purple colour, excepting a narrow line round the margin of the segments. The crest on the lip bright yellow, and the column very dark.

Brassocattlælia Jupiter var. His Majesty, from Messrs. Stuart Low & Co. A vigorous plant carrying a couple of immense flowers, in colour soft rose, the front area of the expansive labellum dark purple-mauve.

AWARDS OF MERIT.

Brassocattleya Jupiter var. Jarvisbrook; from Messrs. Stuart Low & Co. This variety carried a single flower of great size, the sepals and petals

light rose, the broadly expanded labellum having a large purple-mauve area on the front.

Odontioda Eulalia; from Mons. Ch. Vuylsteke, Belgium. A handsome hybrid carrying a spike of fifteen medium-sized flowers, symmetrically marked with reddish-purple.

Odontioda Orange King; from Mons. Ch. Vuylsteke. A bright result, in which the spike bore eleven orange-coloured flowers.

Cymbidium Nelly var. Golden Glow; from Messrs. Sanders. A grand plant with three spikes and an aggregate of thirty-seven greenish-yellow flowers, the front lobe of the lip crimson-red.

Odontioda Radiant, from Messrs. J. & A. McBean. A neatly formed flower, of which four were carried on the spike, the whole area being soft scarlet colour.

CULTURAL COMMENDATION.

To Mr. J. Collier, orchid grower to Sir Jeremiah Colman, Bart., for a superb plant of Dendrobium acuminatum, with four spikes and a total of fifty-five flowers.

TRICHOPILIAS.—These plants are best grown in pans or in teak baskets ou account of the facility with which they can be suspended near the glass, and where their somewhat pendulous flower spikes show to advantage. The genus was founded by Lindley on the Mexican species T. tortilis, the curious appendage at the apex of the column suggesting the generic name, which is derived from the Greek words for a hair and a cap.

MAXILLARIA VENUSTA.—This charming species was originally discovered by Linden in 1842 on the Cordillera of Venezuela in the province of Merida, but not introduced till 1851, when it was re-discovered by Schlim on the eastern Cordillera of Colombia, near Ocana, and sent by him to Linden's establishment at Brussels, where it flowered for the first time in Europe in 1854. M. venusta is easily recognised by its long, acuminate, milk-white sepals and petals.

BIFRENARIA INODORA.—The earliest account we have of this plant is that it was imported from Rio de Janeiro in 1839, and added to Sir Charles Lemon's collection at Carclew, where it flowered in 1843. It was subsequently gathered by the Belgian collector, Libon, in Minas Geraes. The pseudobulbs, leaves, and inflorescence are similar to those of Bifrenaria Harrisoniæ. Flowers three inches in diameter; sepals apple-green; petals much smaller but brighter in colour; lip white, yellow or dull rose colour, three-lobed, the median lobe hairy, reflexed and crisped at the margin.

ROYAL HORTICULTURAL SOCIETY.

April 25th, 1922.

MEMBERS of the Committee present :—Sir Jeremiah Colman, Bart. (in the Chair), Messrs. Jas. O'Brien (hon. sec.), R. Brooman White, A. Dye, C. J. Lucas, Fred. K. Sander, H. T. Pitt, T. Armstrong, A. McBean, W. J. Kaye, E. R. Ashton, Pantia Ralli, Gurney Wilson, Rich. G. Thwaites, C. H. Curtis, and S. W. Flory.

AWARDS OF MERIT.

Angræcum Leonis, from Sir Herbert Leon, Bart., Bletchley Park, Bucks. A fine specimen, with 13 white flowers, of the species shown by Sir Trevor Lawrence and other exhibitors at the R.H.S., August 25th, 1885, as Angræcum Humblotii, when a First-class Certificate was awarded. Originally discovered by M. Leon Humblot in the Comoro Islands.

Catasetum Trulla, Dovercourt variety, from Dr. F. Bedford, Eslaforde, Marden, Kent. A very distinct variety, appearing almost black, but viewed by transmitted light, the colour is deep maroon-purple, the central area of the trowel-shaped lip being yellowish. The spike carried eight flowers.

Brassocattlælia Truffantiana, Low's variety (Bc. Mrs. J. Leemann × Lc. luminosa), from Messrs. Stuart Low & Co. A large flower with yellow sepals and petals, tinged with green, the broad labellum magenta-rose, and with yellow lines at the base.

GROUPS.

Messrs. Sanders were awarded a Silver Flora Medal for a fine exhibit of Cymbidiums, including Sanderi and Elfin, the rare Trias picta with red flowers, Xylobium leontoglossum, several good Cœlogynes, rare Masdevallias, Dendrobium cariniferum, and in the centre a noble plant of Vanda suavis bearing four many-flowered spikes.

Messrs. J. & A. McBean received a Silver Flora Medal for an extensive group, containing the elegant Lc. Eunice alba, several fine plants of Odontoglossum Pescatorei with spikes of about 80 blooms, a handsome variety of Cattleya Tityus, many Odontoglossum hybrids, of which O. leightonense var. Esmeralda (Rossii × promerens) was especially fine, of deep crimson, the rose coloured labellum having a bright yellow crest.

Messrs. Stuart Low & Co. were awarded a Silver Flora Medal for an attractive exhibit of various Dendrobiums, including D. trifiorum, D. Brymerianum and D. Thwaitesiæ, the pretty Disa sagittalis, a fine variety of Cirrhopetalum picturatum, Phaius Marthæ, and the now scarce Cattleya Lawrenceana.

Messrs. Flory & Black obtained a Silver Banksian Medal for a group, in which Slc. Hanningtonii and the Langley variety of Slc. Joseph

Charlesworth were prominent features. Lc. Wish Wynne (C. Mossiæ × Lc. Bellata) was a fine flower of the Lc. Canhamiana type.

H. T. Pitt, Esq., was awarded a Silver Banksian Medal for a neat exhibit, comprising the fine Miltonia Bleuana Princess Elizabeth, M. Venus var. Dulcis, the scarce Cypripedium glaucophyllum, and the pretty Epidendrum Endresii, which was much admired.

Dr. F. Bedford showed a robust plant of the very rare Dendrobium Ashworthiæ with a spike of eight well-developed flowers.

Richd. G. Thwaites, Esq., exhibited Cattleya Mary Sander, Thwaites' variety, with pure-white flowers.

May 9th, 1922.

Members of the Committee present :—Sir Jeremiah Colman, Bart. (in the Chair), Prince Tadashige Shimadzu, Messrs. J. O'Brien (hon. sec.), C. J. Lucas, Gurney Wilson, R. Brooman White, H. T. Pitt, Pantia Ralli, F. J. Hanbury, E. R. Ashton, R. G. Thwaites, W. J. Kaye, A. G. Alexander, Fred. K. Sander, A. Dye, W. H. Hatcher, Stuart Low, and A. McBean.

A Silver Flora Medal was awarded to H. T. Pitt, Esq., for an excellent exhibit containing the elegant Maxillaria Sanderiana, Cymbidium Lowgrinum, with a richly coloured lip, the rare Cypripedium glaucophyllum, and a fine variety of Lycaste Skinneri alba. A special feature was the series of Miltonias, including many of the G. D. Owen class with handsomely blotched labellums, and an example of the scarce pure white M. vexillaria alba.

G. W. Bird, Esq., Manor House, West Wickham, exhibited Odontioda Sultan var. Scutari with a grand spike of 18 finely developed flowers of reddish colour.

R. Gerrish, Esq., Milford Manor, Salisbury, staged Odontoglossum majesticum, Gerrish's variety, the result of crossing eximium and percultum, the spike carrying three large flowers of claret-purple colour.

R. G. Thwaites, Esq., exhibited Sophrocattleya Gwendoline var. Golden Dawn, a pretty flower with buff yellow sepals and petals, the latter rose-tinted, the lip having the front lobe ruby-purple.

J. J. Bolton, Esq., Claygate, Surrey, showed two remarkably fine cut flowers : Brassocattlælia Jupiter var. John Cowan, over ten inches across, of light blush-rose colour, the deeply fringed and crisped labellum being very wide and tinted with violet at the front. The other flower was Cattleya Corydon, about nine inches across, with segments of perfect shape and unusually well coloured with rich rosy-mauve, the large labellum being ruby-crimson.

MANCHESTER ORCHID SOCIETY.

April 20th, 1922.

MEMBERS of the Committee present: Rev. J. Crombleholme (in the Chair), Messrs. R. Ashworth, Dr. Bedford, J. Birchenall, A. Burns, A. Coningsby, D. A. Cowan, J. C. Cowan, J. Ellwood, J. Evans, A. Hanmer, J. Howes, A. Keeling, D. McLeod, J. McNab, E. W. Thompson, J. Thrower, H. H. Smith, and H. Arthur (secretary).

A Gold Medal was awarded to S. Gratrix, Esq., for a group of Cattleyas and hybrids in great variety, and to Messrs. Charlesworth & Co. for a magnificent exhibit, in which Brassocattleyas were well represented.

FIRST-CLASS CERTIFICATES.

Cattleya Tityus var. Royalist, splendid flower, sepals and petals mauve, large lip deep magenta, with bright yellow throat; Od. crispum var. West Point elegance, heavily blotched with reddish brown; Od. St. George var. Brilliant, white ground, blotched with claret-red; from S. Gratrix, Esq.

Od. Duke of Clarence, fine shape, reddish brown; Bc. Jupiter var. Lady Mary Cambridge, a large mauve flower; from Mrs. Gratrix.

Dendrobium Ashworthiæ, Bedford's var., a fine variety of this scarce species; Catasetum Trulla, Dovercourt variety, an unusually dark form; from Dr. F. Bedford.

Cymbidium Garnet, a dark variety; C. eburneo-giganteum, sepals and petals reddish; from Rev. J. Crombleholme.

Odontoglossum Pescatorei album, Haddon House var., a pure white form of fine shape; Od. Doraq, large flower of perfect shape; from P. Smith, Esq.

Lycaste Imschootiana, Bridge Hall var., a very fine variety; from Mrs. Bruce and Miss Wrigley.

Oda. Evelyn, Edgemoor var., bright scarlet flowers of fine shape; from A. Hanmer, Esq.

Oda. Sultan, sepals and petals nearly black, lip reddish; from Messrs. Keeling & Sons.

AWARDS OF MERIT.

Lycaste Skinneri var. Red Cap; from Mrs. Bruce and Miss Wrigley.

Sophronitis grandiflora, Bedford's var.; from Dr. F. Bedford.

Oda. Hypatia, West Point var.; from S. Gratrix, Esq.

Od. Amber; from A. Hanmer, Esq.

AWARDS OF APPRECIATION—FIRST-CLASS.

Od. crispum var. Royal Beauty; from S. Gratrix, Esq.

Cypripedium Gloss (Thompsonii × Desdemona); from P. Smith, Esq.

CULTURAL CERTIFICATES.—Dr. F. Bedford, for Dendrobium Ashworthiæ; Mr. J. Howes, for Oda. Hypatia, West Point var.

THE ORCHID REVIEW.

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NOTES.

DENDROBIUM CRUMENATUM.—In the Philippine Islands the yellow stems of this plant are used for purposes of ornamental weaving. In the economic plant collection of the Bussey Institution of Harvard University there is a riding whip, the handle of which is covered with interwoven strands taken from the stems of Dendrobium crumenatum and from a species of fern, probably from Lygodium circinnatum.—OAKES AMES, in *Orchidaceæ*, 1922, 96.

LYCASTE FULVESCENS.—The peculiar drooping habit and the uncommon colouration of the flowers of this species are among the prominent distinguishing features. It was discovered by Linden in 1842 on the eastern Cordillera of Colombia, at 6,000 feet elevation, near Ocana, and afterwards collected by Schlim and Wagener. It was first cultivated in this country by the Rev. John Clowes, of Manchester, in whose collection it flowered in 1845.

SOUTH AUSTRALIAN ORCHIDS.—At the meeting of the Linnean Society, held at Burlington House on May 4th, Mr. Edwin Ashby exhibited pressed specimens of Orchids from South Australia, including a number of the spider-like members of the genus Caladenia, and the green-hooded forms of the genus Pterostylis: many of these have a sensitive labellum, which, on the entrance of an insect, closes up the entrances for a short period; Mr. Ashby suggested that this was for the purpose of fertilisation. A species of Thelymitra, which only opens its bright-coloured petals during hot sunshiny days, and two species of Caleana were exhibited, both provided with a sensitive labellum, which, on being touched, folds up in two separate movements. A species of Diuris intermediate between D. maculata and D. longifolia, although now a fixed form, seems certainly to have been derived by hybridisation. For many years before it was described by Dr. Rogers as Diuris palachila, Mr. Ashby had known it under his own name of D. hybrida, thinking it could hardly deserve specific rank. A very beautiful form known us Caladenia tutulata, intermediate between the genera Glossodia and Caladenia, was also shown and its characters explained.

ODONTOGLOSSUM RAVENWOOD.—Flowers of this new hybrid between O. formosum and O. crispum Menteith come from the collection of Wm. Salkeld, Esq., Ravenwood, Kirkoswald, Cumberland. The cross was originally made in the late Mr. Menteith Ogilvie's collection, and the young seedlings were acquired at his sale by Mr. Salkeld. The plants have a robust constitution, and produce fine branching spikes of bloom, due in some measure to the inclusion of O. Pescatorei in the parentage. The influence of this species is also seen in the pleasing violet tinge, both on the front and back of the segments. The purplish markings are symmetrically arranged, and there is no trace of any undesired yellow staining, which in some flowers destroys the contrast between the bright purple and the clear white ground.

LYCASTE LAWRENCEANA.

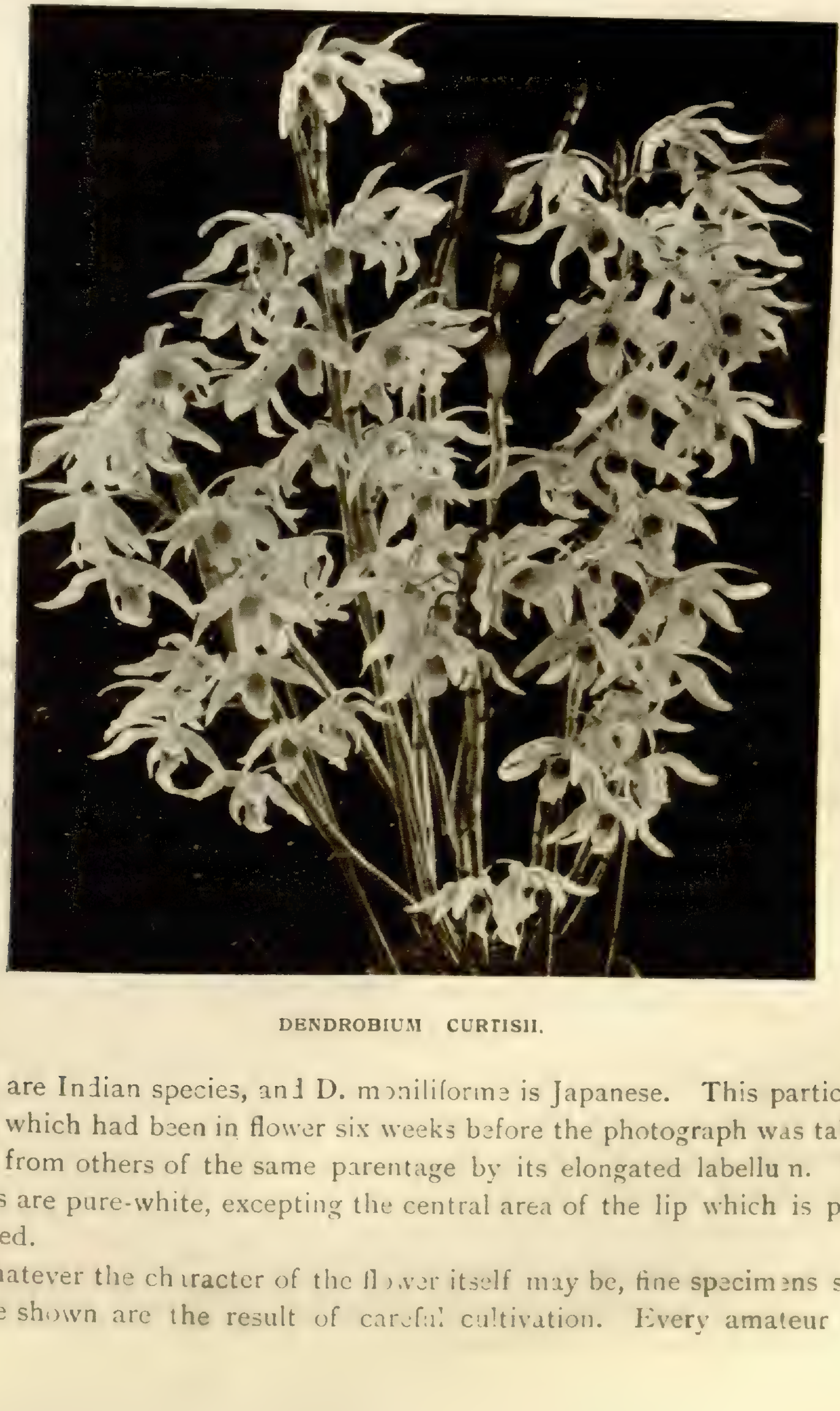
AN interesting novelty named Angulocaste Vesta, was exhibited by Messrs. Sanders at the recent Chelsea Show. It constitutes the fourth recorded hybrid of its section, the parentage being given as Anguloa Clowesii and Lycaste Lawrenceana, and the flower showed about equally the characters of both parents. A question now arises as to the specific name of the Lycaste parent. In Sanders' *Orchid Guide*, it is given as a variety of L. candida, and it is also treated as such in Veitch's *Orchid Manual*, with the remark that horticulturists distinguish the sub-variety, in which all the floral segments are more or less tinted with rose, by the name of Lycaste Lawrenceana.

But Rolfe, when figuring this species (*Orch. Rev.* x. 113), criticised the wisdom of referring it to L. candida, a name which he considered quite misleading, and under the circumstances should be discarded. He adopted the name Lycaste brevispatha, under which it was described by Klotzsch (*Allg. Gartenz.* 1851, *p.* 217). Subsequently, when again figuring the plant (*Orch. Rev.* xxvi, 112), he stated that there is also a form of the species in which the rosy blotches are quite absent, and which bears the name of L. candida. Dr. Schlechter in his critical enumeration of the Central American Orchids (*Bot. Centralbl.*, xxxvi, *p.* 491), supports the opinion of Sander and Veitch, by maintaining L. candida as the correct specific name, L. brevispatha being treated as a synonym.

A note from Mr. C. H. Lankester (*Orch. Rev.* xxvi, 181), mentions Lycaste brevispatha as being a very variable species, and the plants growing under the shadiest conditions seem to have the most heavily-marked flowers. They are often grown on the roofs or the tops of old walls, and are remarkably floriferous under such conditions. Mr. Lankester considers L. candida to be probably a geographical form.

DENDROBIUM CURTISII.

OF the many fine Dendrobiums that have been raised in the collection of Sir Jeremiah Colman, Bart., at Gatton Park, Surrey, the one here illustrated has several attractive features. It is the result of crossing D. aureum with D. Cassiope (moniliforme × nobile). D. aureum and D



DENDROBIUM CURTISII.

nobile are Indian species, and D. moniliforme is Japanese. This particular plant, which had been in flower six weeks before the photograph was taken, differs from others of the same parentage by its elongated labellum. The flowers are pure-white, excepting the central area of the lip which is plum coloured.

Whatever the character of the flower itself may be, fine specimens such as here shown are the result of careful cultivation. Every amateur will

agree that the attractiveness of a Dendrobium lies not so much in a single flower, but in the general effect of a number of flowers gracefully arranged on several bulbs. These results are only obtained by giving the plants appropriate treatment through the whole year. From the time when growth commences in the early part of the summer, every encouragement should be given to the plants to make vigorous bulbs. A fairly light position in a warm house is essential; many fine plants have been grown in vineries. The temperature should be well maintained, and on all bright days the plants may be syringed with tepid water.

About the middle of August, the new bulbs will show signs of completing their season's growth, and it is then advisable to slightly reduce the moisture, and at the same time to gradually increase the ventilation. By degrees the shading on the roof is lessened, until after a few weeks it will only be required for a couple of hours during the middle of the day. If these conditions are properly attended to the new bulbs will gradually assume a ripe golden colour. But while they must on no account be allowed to shrivel through the water supply being unduly restricted, care must be taken to prevent the compost remaining saturated, for a cold and non-porous condition will rapidly bring about disastrous results if allowed to continue. A lower temperature and drier conditions will maintain a state of rest until the end of the year, when the production of flower buds will indicate that a few degrees more heat, say about 55 degrs., and slightly more water are needed.

WARREA TRICOLOR.—First cultivated by Messrs. Loddiges in 1829. This species appears to have been but little known until it was imported from Santa Martha, in Northern Colombia, by Purdie. It flowered at Kew in 1845.

ODONTOGLOSSUM LUGANO.—This novelty has flowered in the collection of Clive Cookson, Esq., Nether Warden, Hexham, whose Orchid grower, Mr. Stables, was formerly with de Barri Crawshay, Esq., Sevenoaks, where the cross was made and the seedlings raised. The parents are luteopurpureum Vuylstekeanum and hellemense Cooksoniæ, and the handsome flowers are of bright golden-yellow colour with rich red-brown markings, which take the form on the sepals of bold blotches, and on the petals of about ten large spots. The blotch of similar colour on the centre of the labellum has the varnished appearance that is characteristic of O. triumphans, which is contained in the hellemense parentage. O. hellemense Cooksoniæ is a distinct variety with almost all yellow flowers, and when making use of this with the albino variety of luteopurpureum known as Vuylstekeanum it was hoped that the resulting flowers would be entirely yellow. But by the above description it will be seen that in the blotched and spotted areas reversion to the typical colour has taken place.

THE GERMINATION OF ORCHID SEEDS

BY J. RAMSBOTTOM, M.A., F.L.S.

THOUGH probably most Orchid growers are more interested in the practical side of seed germination than in the theoretical questions involved, the latter are of such great botanical and horticultural importance, that any attempt to solve the problems entailed in the processes is certain to arouse the interest of both Orchidologist and Botanist. As everyone knows, the prevailing idea since the time of Noël Bernard, is that the fungus usually present in the roots of any given Orchid, must infect the seed before germination can occur. In this country, my friend the late Mr. Joseph Charlesworth, was for many years the main upholder of this theory, and it is common knowledge, that by introducing laboratory methods into his houses, he achieved results that will ensure that his name will always be associated with the raising of Orchid seedlings. It will, therefore, be a matter of suprise to many that Professor L. Knudson, of Ithaca, has called into question the necessity of the fungus for successful germination (*Botanical Gazette, lxxiii, p.* 1, 1922: "Nonsymbiotic Germination of Orchid Seeds"). As hints have already appeared in the horticultural press that the end of many of the troubles of the Orchid house is almost in sight, it has been suggested that a critical summary of Knudson's results would serve a useful purpose. It may be as well to state clearly at the outset, that even if these methods should prove capable of general application, they are just as formidable as the so-called "pure-culture" method. The same galaxy of sterilisers, flasks, and so on is necessary; although the root fungus is not called upon, there is even more need to prevent contamination of the media by the numerous fungi which usually abound in the houses—bacteriological cleanliness is essential.

"The difficulty of germinating seeds of Orchids is due in part to inherent causes, but undoubtedly is due also to environtmental factors. The extremely small size of the embryo renders it liable to death if it becomes desiccated. . . . The increasing importance of Orchid culture in America, the difficulties in, and the restrictions on the importation of Orchid plants, and the desirability of creating new hybrid forms, make particularly desirable a method for germinating the seeds."

Knudson started from the fact, first ascertained by Bernard, that the seeds of Cattleya and Lælia can be successfully germinated on a concentrated solution of salep, and that the seedlings can be transplanted. Knowing from his previous experiments on the nutrition of plants, that sugars have a favourable influence on growth, Knudson surmised that they might affect Orchid seeds similarly. Throughout the experiments cultures were made on agar slopes in tubes, the nutrient solution used being that of

Pfeffer, or a modification thereof, differing principally in having an ammonium salt in place of a nitrate. (The cultures were all grown under aseptic conditions and the seeds were sterilized with calcium hypochlorite).

In preliminary experiments it was shown by planting seeds on various organic extracts (peat, carrot, etc.), that "germination of seeds of Cattleya and Lælia is possible without the aid of the fungus, provided soluble organic substances are present, particularly sugars." Growth, however, appears slower than under ordinary cultural conditions, and Knudson suggests that in the latter case, the fungus may play a part, but that it is also possible for certain organic products of decomposition of the substratum, to be involved in germination. Knudson and Lindstrom showed in their experiments with albino corn, that a full nutrient medium plus sugar is not capable of sustaining continued growth: plants kept either in the light or in the dark and supplied with one of several sugars all died after a month or two. These experiments, together with the well-known results obtained by the late Professor Bottomley, on the beneficial effect of auximones, and those of several recent authors on the influence of vegetable extracts on the growth of fungi, suggested that more rapid germination, and more vigorous plants, could be obtained if a vegetable extract were added to the nutrient medium. This was put to the test, the extracts used being potato, wheat, beet and yeast, all of which apparently had a stimulating effect on growth. These results are comparable with those obtained in experiments on animal nutrition, where accessory food factors (vitamines), are found to have a similar beneficial effect. The results of five series of experiments are given, the details of which cannot be gone into here; they deal further with the influence of concentration of sugar, the influence of micro-organisms (i.e., other than root fungi) and transplanting experiments.

It will be seen from the above that no really new facts have been added to our knowledge; the value of the work lies in the precising of certain factors, though many of these call for still further analysis. The theoretical conclusions reached are, however, quite different from those which have previously been generally accepted. Bernard, convinced of the necessity of the fungus for normal germination, attempted to replace its action by chemical stimulation, and succeeded in the case of Cattleya and Lælia-genera which, it may be added, cause little trouble to the grower. (These results were confirmed by Mr. Charlesworth and the present writer, though attempts to extend the method to Odontoglossum and its allies have so far failed). Knudson, on the contrary, approaching the question from a study of these genera and not having experimented with the fungi, is biassed against accepting the fungus theory as necessarily the correct one. He lays stress on certain statements of Bernard. "Granting for the present that a symbiotic relationship exists between the fungus and the embryo, it

is nevertheless true that failure of germination is more common than success, even when the fungus is provided. Bernard's experiments reveal case after case, in which the introduction of the fungus was followed by death of the seeds or failure to germinate. He states as follows:—

"The germination by inoculation is not obtained without certain difficulties. For five years I have sown seeds of diverse species of Orchids in culture tubes, each of which contained 100 seeds, and these I have inoculated with Rhizoctonia obtained from the roots. Altogether, I have obtained a few hundreds of seedlings, but I underestimate when I place the number of seeds used in my experiments at 50,000. For the majority of the seeds, the association with the fungus that I have placed in their presence has been merely passive and without effect, or impossible, or rapidly injurious to the embryos."

It would be well not to lay undue stress upon this statement. Bernard was probably too much imbued with the idea of the *identity* of fungi of merely *similar* appearance. Flasks showing percentages of germination in Odontoglossum, hardly dreamed of by Bernard, have been repeatedly exhibited during the last eighteen months: those in the Scientific Tent at the Chelsea Show last year, were in no wise picked flasks, save that they were chosen to illustrate certain points—they were typical rather than exceptional. Moreover, during the last few months, such success has been obtained with Cattleyas, that Bernard's further idea that in this genus more certain and regular results are obtained by stimulating seeds chemically, than by sowing them on the fungus must be abandoned.

Bernard believed that the action of the fungus was physico-chemical: the fungus causes an increase in the concentration of the cell sap, and induces germination and protocorn formation, in a way similar to that in which the forms of unicellular algæ are changed by increasing the concentration of the external solution. Knudson believes that the fungus may bring about germination in another way. Bernard used salep in all his media. "In view of the fact that organic matter is present, it is conceivable that the influence of the fungus might be to digest some of the starch, pentosans, and nitrogenous substances; which digestion products, together with secretions from the fungus or products produced on decomposition of the fungus, might be the cause of germination. In brief, it is conceivable that germination is induced not by any action of the fungus within the embryo, but by products produced externally on digestion or secreted by the fungus."

Knudson faces many of the difficulties which his theory meets with in interpreting various results obtained both by Bernard and by Burgeff, but is hampered in not knowing whether certain results were typical, or anomalous.

"There are other phases of the problem presented by Bernard, especially the loss by the fungus of its capacity to induce germination after prolonged culture in the laboratory. It is entirely possible that there has been no loss in the fungus, but that at the time of inoculating the culture the physiological state of the embryos was such as to resist or permit of infection. Those in which the infection was confined to the lower cell could still germinate despite the fungus. Those invaded to a greater extent would be killed. These and and other experiments of Bernard and Burgeff suggest that one of the causes for the failure of germination is the parasitic character of the fungus. In other words, it is possible that the fungus, instead of being an aid in normal germination, is a factor in the death of the embryos, and consequently in the failure of germination."

It is stated finally that "the evidence for the necessity of the fungus for germination has not yet been conclusively proved. The evidence is conclusive that under conditions of pure culture employed by both Bernard and Burgeff germination of the seeds is dependent on the fungus." To many it will seem, as it does to the writer, that conclusive evidence in the one case would be equally conclusive in the other. What is the evidence upon which the usual theory is based? Whatever may be the theoretical explanation—and on this aspect experiments are still in progress—there are certain incontrovertible facts.

1. The roots of all Orchids growing naturally have fungus mycelium in their cortical cells. (Hundreds of species have been examined, and in every case, except that of the saprophytic Wuhlschlagelia aphylla, fungi have been recorded. Under cultural conditions fungi are sometimes absent). When these fungi are isolated and grown in culture, they can be arranged in certain groups or species—an "Odontoglossum fungus," for example, has a totally different facies from a "Cattleya fungus."

2. The fungus present in Orchid roots is always the same genus i.e.—Rhizoctonia of Bernard, Orcheomyces of Burgeff. The only known case where a different genus is concerned, is the Japanese species, Gastrodia elata, where the toadstool Armillaria mellea forms an association with the tuber. (The details of germination in this species are not yet known).

3. When seeds of Odontoglossum, for example, are sown on a series of root-fungus cultures, there is no germination in some cases, in others germination is very poor, while in others apparently every seed germinates, the mycelium spreading over the glass stimulates seeds which may happen to be there, and these frequently reach the stage of producing leaves. The fungus which brings about this last type of germination where, in a normal flask, the whole surface is covered with a green mat of germinating seeds, is *the fungus isolated from the roots of the parent plant*? Any other fungus than an Orchid fungus, if it enters the seed, acts as a parasite and kills the seed.

ONE OF THE ODONTOGLOSSUM HOUSES IN MESSRS. CHARLESWORTH AND CO.'S ESTABLISHMENT.
SHOWING SEEDLINGS ONE YEAR OLD GROWN BY THE PURE CULTURE METHOD.

4. Orchid seedlings, both native and cultivated, show the fungus present in their cells from the earliest stages of development. We know that in certain cultivated Orchids, at least, the fungus enters the cells of the seeds (in culture flasks), before any development can be made out. The fungus does not grow more or less in a straight line as is almost universal in the group, but rolls itself up in one cell before passing on to the next. Further, the fungus in such cases as Odontoglossum, Vanda, etc., degenerates and does not pass into the developing root.

5. The fungus must either be beneficial, harmful, or of no effect. Seeds of Odontoglossum placed in culture flasks made up with ordinary potting material and identical in every respect, except that in one an "Odontoglossum fungus" is present, and absent from the other, show, after five months, seedlings crowding one another out in the former case, whereas in the latter the seeds have at the most become green. It seems probable that originally the fungus was a true parasite on the Orchid, but a study of the present course of events shows that the flowering plant normally has the fungus well under control and might now, with a certain amount of truth, be regarded as parasitic on the fungus.

Such work as that of Professor Knudson is extremely valuable in that it approaches the subject from a physiological standpoint. The physiological problems concerned, may possibly prove of the greatest importance in the study of immunity to disease both in animals and in plants—but to a mycologist an Orchid seedling without its fungus is like Hamlet without the Prince of Denmark.

CATTLEYA DUSSELDORFEI AQUINII.

AMONG the many hybrid Orchids exhibited by Messrs. Stuart Low & Co. at the recent Chelsea Show that named Cattleya Dusseldorfei Aquinii proved of more than ordinary interest. It is a well-known fact that in nearly all Cattleyas and their hybrids the sepals and petals are similarly coloured, indeed, we are so accustomed to see them as such that any deviation comes as a surprise. There is, however, a desire among a few hybridists to create flowers having the outer whorl of three sepals different in colour or tint to the inner whorl of two petals and the labellum. There is no doubt that a careful selection of parents would yield some flowers with pleasing contrasts in this respect.

Cattleya Dusseldorfei is the result of crossing C. intermedia Aquinii and C. Mossiæ, and although coloured forms are in existence, this hybrid is generally represented in gardens by the pure-white variety obtained through the use of albino forms of both parents. A few years ago Messrs. Stuart Low & Co. made some crosses with the intention of producing a Cattleya having the inner whorl of segments darker in colour than the outer whorl of sepals, and one of the experiments consisted of crossing C. intermedia Aquinii with C. Mossiæ, hoping by so doing to produce a new variety of C. Dusseldorfei.

Cattleya intermedia Aquinii is figured in the *Orchid Review*, vol. viii., p. 73, and it represents a peloriate form of this Brazilian species. It was originally described by M. B. Rodrigues in 1893 (*Journ. des Orch.*, iv., p. 144). In this remarkable variety the two petals bear a rose-purple area of colour

similar to that of the labellum. It is almost a three-lipped variety, and the peculiarity is quite constant. In the hybrid exhibited by Messrs. Stuart Low, which was the first seedling of the batch to bloom, the flower showed in a marked degree the distinctive characters of the Aquinii variety of C. intermedia, so much so that this varietal name was attached to the hybrid. The flower was intermediate in size and each petal bore on its outer area a large rose-purple blotch. On the inner side of this blotch was a milk-white border corresponding to the similarly-coloured area seen in the middle of the lip.

The flower of C. intermedia Aquinii should not be regarded as a monstrosity, but of teratological interest on account of the light it throws on the structure of an Orchid flower. How far this peloriate condition will be carried forward remains to be seen. Another experiment made by Messrs. Stuart Low consisted of crossing C. intermediate Aquinii with a variety of C. Mendelii having the tips of the petals flushed with purple, and in the resulting three hybrids that have so far flowered only one showed the desired purple-tipped petals. C. Trianæ Backhouseana would probably yield favourable results when crossed with C. intermedia Aquinii, but owing to the early period of the year in which it flowers the opportunities of making the cross are somewhat remote.

ZYGOPETALUM SEDENII.—This plant is of interest as representing the first raised hybrid Zygopetalum, the parents being maxillare and Mackayi. Received First-class Certificate, Royal Horticultural Society, August 5th, 1874.

LÆLIOCATTLEYA MARTINETII VAR. CLEMENT MOORE.—A letter received recently from Mr. E. J. Hannington, who is now in charge of the well-known collection of Orchids belonging to Clement Moore, Esq., of Hackensack, New Jersey, U.S.A., refers to some of his wonderful plants. Among the hybrids, mention is made of the above variety of Lc. Martinetii, obtained by crossing L. tenebrosa Walton Grange variety and C. Mossiæ Reineckiana. Of the two plants that have so far flowered, both are unusually fine, having soft yellow sepals and petals and a very dark cerise lip. This cross makes an excellent companion to Lc. luminosa aurea (L. tenebrosa Walton Grange var. × C. aurea), in which the sepals and petals are also yellow. Another hybrid, recorded as Lc. Ruth Erbe, is the result of crossing Lc. Aureole with C. A. Dimmock, and is a grand flower resembling Lc. Firminii. The third novelty exists in Blc. Mohawk, obtained by crossing Bl. Helen with Bc. Mrs. J. Leeman. The first of the batch to bloom takes after the former parent, but is a much bolder flower and thick in texture, while the colour is a deeper yellow.

CATTLEYA MAXIMA.

THIS species appears to have been first discovered by Ruiz and Pavon, two Spanish botanists, who had been sent out to Peru in 1777 by the Spanish Government to investigate the Cinchona forests of that country, and who gathered it on the Andes, near Guayaquil. Ruiz and Pavon's herbarium specimen was acquired by A. B. Lambert, from which this Cattleya was partially described by Lindley in 1831. Eleven years later it was gathered by Hartweg, and sent to the Horticultural Society of London, in whose garden at Chiswick it flowered in 1844. Lindley figured it in the *Botanical Register* for 1846, and remarked: "We may be excused for doubting how far this beautiful plant can lay claim to the rank of a species, for it evidently approaches both C. Mossiæ and C. labiata in many important particulars. If, however, we attach any value to differences of colour, then, indeed, there remains no difficulty in separating this plant, for it is remarkable for the dark crimson veins, richly traced upon its pallid lip, and for a beautiful net-work of purple streaks, which is drawn all over their surface."

There are two distinct forms: the original C. maxima, gathered by Ruiz and Pavon, and Hartweg, has plump, short, crowded stems, with stiff upright leaves, and deep-coloured flowers; the other has longer and more slender stems, with thinner leaves and pale flowers. The typical form, with short pseudobulbs, was at one time known as Backhouse's variety, and a fine example is figured in the *Orchid Album*, t. 193, as C. maxima Backhousei. A very much darker variety is figured in a subsequent volume of the same work (t. 404) as C. maxima Marchettiana. This plant is described as compact growing, with club-shaped bulbs some twelve inches high, bearing a single leaf about five inches long and nearly two inches wide. But the colour of the flower is so very distinct as to render it quite a freak example, and of somewhat similar character to that seen in Peeter's variety of C. labiata.

A First-class Certificate was awarded to C. maxima when exhibited by Messrs. Veitch at the Royal Horticultural Society, November 5th, 1867, and a similar award to the variety peruviana shown by Messrs. Sanders, May 12th, 1885. C. maxima alba was exhibited by Mr. Hamar Bass at the meeting of the above Society, held November 10th, 1896, when it also obtained a First-class Certificate. The whole flower was pure white, with the exception of a broad light yellow line along the disc, the latter being characteristic of the species. This beautiful variety appears to have been the first recorded true albino of C. maxima. In 1881 Messrs. Veitch flowered, and named as alba, a variety with pure-white flowers, excepting some rose-purple veins on the front of the lip; hence it was not a true

albino in the sense that we use this term to-day. In the variety described in 1884 as C. maxima aphlebia the purple markings on the lip were absent, the yellow blotch being surrounded by pale purple. At the Manchester Orchid Society meeting, held on October 7th, 1897, an Award of Merit was given to a very fine variety of the species exhibited by Mr. E. J. Sidebotham.

The usual flowering season of C. maxima is the late autumn, but blooms are sometimes produced in the spring, as was Messrs. Sanders' variety peruviana. Late in May we received a fine example of the typical form from Dr. Bedford's extensive collection at Eslaforde, Marden, Kent. This species is now rarely seen in cultivation.

MEGACLINIUM PURPUREORACHIS.

ONE of the most extraordinary Orchids exhibited at the recent Chelsea Show was a fine plant of Megaclinium purpureorachis in the group shown by Sir Jeremiah Colman, Bart. Its history goes back to 1903, when it was described by De Wildeman from materials collected by M. Gentil at Ninumbi, on the Upper Lomami, a tributary of the Congo. In September, 1908, it flowered in the Botanical Gardens, Glasnevin, and in April of the following year it was exhibited by Sir Trevor Lawrence, Bart., at the Royal Horticultural Society, and awarded a Botanical Certificate. At the dispersal of the Burford collection, Sir Trevor's plant passed into the possession of Sir Jeremiah Colman, Bart., whose collection at Gatton Park is famous for the numerous species of botanical interest.

Lindley, in describing Megaclinium Bufo, remarked: "Let the reader imagine a green snake to be pressed flat, like a dried flower, and then to have a row of toads, or some such speckled reptiles, drawn up along the middle in single file, their backs set up, their fore legs sprawling right and left, and their mouths wide open, with a large purple tongue wagging about convulsively, and a pretty considerable approach will be gained to an idea of this strange plant, which, if Pythagoras had but known of it, would have rendered all arguments about the transmigration of souls superfluous." For some unaccountable reason, Sir Trevor's plant was at first labelled M. Bufo, but subsequently corrected to M. purpureorachis. When exhibited at this year's Chelsea Show the inflorescence was finely developed, being about a foot in height, with the rachis or central stalk flattened out to nearly a couple of inches in width, on each side of which, in a row along the mid-rib, were about thirty of the little toad-like flowers, apparently just waiting to play a long game of leap-frog. The rachis is heavily blotched with dark purple on a light yellow-green ground, hence the specific name purpureorachis. The flowers are very hairy and dark brown in colour.

THE WARNHAM COURT COLLECTION, HORSHAM, SUSSEX.

FOR over forty years Orchids have been cultivated in the extensive and beautiful garden of C. J. Lucas, Esq., at Warnham Court, Horsham, Sussex. Although the collection is not quite so large as in the pre-war times, it will not be long before its former glories return. In fact, judging by the rapid way in which the plants are recovering their former vigour, all past records will be beaten in the near future. No matter how old or small the plant, almost without exception a most encouraging revival of new growth and root formation is to be seen. Most of the larger plants have been divided, or have had their back bulbs removed, the newer portions then take on a new lease of life, and in the course of a couple of years are sufficiently strong to carry substantial spikes of bloom.

One of the chief causes of the renewed vigour here in evidence is the manner in which the interior construction of the houses has been altered in accordance with present-day knowledge of the plant's requirements. In place of the heavy and solid staging of by-gone days, everything is so arranged that a light and genial atmosphere is maintained. The hot-water pipes are at a distance of several feet beneath the staging, while a few inches above them is a tray-like covering on which shingle or other moisture-holding material is placed. The staging itself is composed of narrow laths of wood, which are arranged so that the shorter sides are top and bottom. This method allows the pots to be so arranged that the drainage hole in the bottom is always uncovered and thus allows free ventilation to the interior. Lath roller blinds are used for shading the cool houses, and during the hottest period of the year an additional tiffany blind is placed some six or nine inches above, leaving ample room for a current of air to pass between. The lath blinds are so arranged that the laths are parallel with the sash bars; they can then be easily rolled up by hand, no cords or pulleys being required.

The Odontoglossum house is well filled with a varied collection of species and hybrids. Among the former are to be seen many of the finer varieties of O. crispum, including a pretty xanthotic variety named Dainty Maid that came from the Walton Grange collection at Stone, Staffs. Other meritorious varieties of this well-known species are distinguished by the names Angel and Rosy Morn, while O. crispum Eric produces flowers of unusually good shape and thick texture. The Odontoglossum hybrids are on the whole more floriferous, and many remarkable spikes of bloom have been produced on some of the plants in this collection. Mention should also be made of O. eximium Eric and of the Warnham Court variety of this hybrid, both being of outstanding merit, the latter having received a First-class Certificate at the Royal Horticultural Society, April 1st, 1913. Not

WARNHAM COURT, HORSHAM, SUSSEX.

many hybrids of O. Uro-Skinneri have as yet been seen, hence the plant named O. Joy (eximium × Uro-Skinneri) is not only of special interest, but it is exceedingly pretty and appropriately named. It received A.M., R.H.S. April 13th, 1920. Another hybrid raised at Warnham Court is O. Eva (cirrhosum × polyxanthum), which yields spikes of about twenty to thirty flowers, the segments prettily curved and with bright yellow areas of colour.

A rarity is to be seen in O. Lucasianum, a natural hybrid between cristatellum and Hallii.

The production of a blue Odontoglossum has on more than one occasion attracted the attention of hybridists, and although the problem cannot yet be said to have been solved, there is here to be seen in O. Ardentisper and in O. Ardentellus two of the nearest approaches to this pleasing colour. O. Othello is an elegant hybrid between Adrianæ (crispum × Hunnewellianum) and Harryanum, and the illustration herewith shows the happy combina-

ODONTOGLOSSUM OTHELLO (HARRYANUM × ADRIANÆ).

tion made by these three species; it received an Award of Merit, R.H.S., April 16th, 1907, when exhibited by Mr. C. J. Lucas. In O. Fascisolon, which was first raised in this collection, there exists a batch of hybrids which show considerable variation: some are unusually pretty, while others are very plain. Other promising Odontoglossums are Purple Queen, Panther, Jasper, the Warnham Court variety of Britannia, Lambardeanum and Fabia, the latter having been awarded a Certificate of Appreciation by the Royal Horticultural Society. Seed-raising is being continued, and the little seedlings, after being removed from the parent pots, are taken care of for the first few months of their existence in small glass cases placed upon the staging in this house. Growing on a raft suspended from the roof are some fine pieces of the straggling Odontoglossum brevifolium, which flower freely.

Odontiodas are proportionately well represented, foremost among them being the Warnham Court variety of Oda. Joan (A.M., R.H.S., March 23rd, 1920). One end of the Cool house is devoted to Miltonia vexillaria and the closely allied forms and hybrids which of late years have been produced. The most attractive are those having a bold dark crimson blotch of colour on the labellum, and obtained through the use of M. vexillaria G. D. Owen. Some six dozen plants, many with several leads, are to be seen. The curious Nanodes Medusæ is cultivated in a shallow pan.

The Cattleya house contains numerous representatives of the best-known species, coloured as well as white varieties all yielding excellent flowers in their respective seasons. One of the attractions at the time these notes were taken was a strong plant of Lælia purpurata Russelliana, with a spike of four flowers. Læliocattleya warnhamensis (L. cinnabarina × C. Trianæ), F.C.C., R.H.S., was one of the first seedlings raised in this garden. A pretty yellow-flowering hybrid is to be seen in Cattleya Tankervilliæ (bicolor × Rex), and pure white flowers are produced by Cattleya Albion, selected varieties of Brassocattleya Digbyano-Mendelii, and the elegant Bc. Albion. There is a healthy plant of Cattleya Iris with several tall bulbs, and apart from being a fine variety is of interest as being a hybrid that is nothing like so plentiful as formerly. Most of the primary hybrids of Brassavola Digbyana are considerably lacking in colour, but in the variety of B.c. Digbyano-Warneri known as Eric Lucas there exists a flower of rich rosy-mauve tints. Facing the entrance to this house several fine varieties of Læliocattleya Marlburia (L. Boothiana × C. Schröderæ) were in flower. The soft rose tints and the delicate veining on the labellum of this hybrid are exceedingly beautiful. It is quite a lady's flower. Sophronitis hybrids are well represented in Sophrocattleya warnhamensis (S. grandiflora × C. amethystoglossa), and especially in Sophrocattlælia warnhamensis, which obtained a First-class Certificate, R.H.S., November 19th, 1918, when exhibited by Mr. Lucas.

An old species, and one now rarely seen, is Lælia harpophylla, which grows well in this house. In pans suspended from the roof are selected varieties of Lælia anceps, and at the end staging are several hundred young seedlings, from which, no doubt, several meritorious novelties will in due time make their appearance.

A strong plant of Schomburgkia tibicinis carried a many-flowered tall spike. At the end of the central staging are five superb plants of the Madagascan Angræcum sesquipedale. They are clothed with dark green leaves almost down to the level of the pot. A very remarkable plant is a fine specimen of Eria vestita, which is singularly clothed with a thick reddish hairiness. The raceme is over a foot long, and bears about twenty-five very hairy flowers. It was described by Lindley in 1844 from a plant

which flowered with Messrs. Loddiges, of Hackney, when it was said to have the structure of a woolly Eria and the habit of a pendulous Dendrobium. The flowers are reddish brown externally and white inside.

Thunias are cultivated with much success, and a fine plant of T. Majoriana is considered one of the best. Several dozen robust plants of Calanthes include Florence (Sedenii × Veitchii), Clive, the superb Harrisii, with pure-white flowers, and selected varieties of the handsome hybrid between Regnieri and vestita, known as C. Baron Schröder. Among the Cypripediums is C. warnhamense (Curtisii × philippinense), interesting as being the first seedling raised at Warnham Court. It received an Award of Merit, R.H.S., December 12th, 1893, although it is now regarded as a variety of C. Clinkaberryanum.

Although the above notes only refer to the Orchids in these extensive and beautiful grounds, there are numerous other horticultural attractions, notably the carnation and peach houses, the herbaceous border and the wild garden. An old cattle hovel has been converted into a spacious summer house, and carved on one of the immense oak beams are the words :—

"Welcome, my friends, that I may to you show
All the delights which in my garden grow,
The likelier far that you will with me stay,
Or soon come back to spend another day."—
C.J.L., 1910.

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR.
Angulocaste Vesta	A. Clowesii × L. Lawrenceana	Sanders.
Brassocattlælia Mohawk	Bl. Helen × Bc. Mrs. J. Leemann	Clement Moore, Esq.
Cattleya Dr. M. Lacroze	C. Octave Doin × C. Tityus	Flory & Black.
Cattleya G. P. Walker	C. Mendelii × C. Tityus	Flory & Black.
Cattleya Heatherwood	C. Mossiæ × C. Tityus	Flory & Black.
Cymbidium Nelly	C. Pauwelsii × C. Albatross	M. Chas. Sladden.
Læliocattleya Ilona	Lc. Cowanii × C. Empress Frederick ...	R. G. Thwaites, Esq.
Læliocattleya Morab	C. Mossiæ × Lc. Rubens	R. G. Thwaites, Esq.
Læliocattleya Ruth Erbe	Lc. Aureole × C. A. Dimmock	Clement Moore, Esq.
Odontioda Duke of York	Oda. Brewii × Odm. excellens	Sanders.
Odontioda Eileen	Odm. Dreadnought × Oda Coronation ...	Stuart Low.
Odontioda Eulalia	Oda. Coronation × Oda. Vuylstekeæ ...	Vuylsteke
Odontioda Orange King	Oda. Chanticler × unknown	Vuylsteke
Odontioda Radiant	Oda. Chanticler × Oda. Royal Gem ...	McBean.
Odontoglossum Colossus	O. eximium × O. Armstrongiæ	Mrs. Bruce, Miss Wrigley
Odontoglossum Gala	O. nebulosum × O. harvengtense	Sanders.
Odontoglossum Lugano	O. luteopurpureum × O. hellemense ...	Clive Cookson, Esq.
Odontoglossum Magpie	O. eximium × O. Magali Sander	Sanders.
Odontoglossum Purple Emperor ...	O. The Czar × O. Dusky Monarch ...	Charlesworth
Odontoglossum Purple Queen ...	O. Delta × O. Corona	C. J. Lucas, Esq.
Odontoglossum Ravenwood ...	O. formosum × O. crispum	Wm. Salkeld, Esq.

CYPRIPEDIUM CHAMBERLAINIANUM.

THE adjoining figure represents a fine plant of this interesting species flowering in the collection of J. T. Bennett Poë, Esq., Holmewood, Waltham Cross. The centre spike, which is supported by a stick, produced no less than twenty-seven flowers, two of which are shown in the photograph, while four additional buds prove that unusually large numbers of blooms are borne from time to time on the same spike. This species is a native of Sumatra, and was introduced to cultivation by Messrs. Sanders in 1892. One of the wild inflorescences obtained by them showed thirty-two bracts, representing an equal number of flowers, but, of course, they were

CYPRIPEDIUM CHAMBERLAINIANUM.

not all open at the same time, for the spike gradually elongates. Our illustration shows a spike carrying three flowers open at the same time, while other plants have given as many as four, which is rather exceptional. The dorsal sepal is yellowish-green, with rosy-purple lines, and with a profusion of rosy-purple spots at the base. The lower sepal is similar, but smaller, and both are strongly pubescent or hairy on the back. The petals are spreading, curled and twisted, and of greenish-colour with crimson-brown blotching, the margins undulated and furnished with white hairs at the edges. The labellum is white, densely spotted with rose-colour on the lower portion, and the staminode dull green. At Messrs. Sanders' request it was named in honour of the late Mr. Joseph Chamberlain.

CYPRIPEDIUM GLAUCOPHYLLUM.

THIS remarkable species was discovered near Turen, East Java, and described by Dr. J. J. Smith, of the Buitenzorg Botanic Garden, in 1900. A plant in flower was exhibited by Messrs. Charlesworth & Co., at the Royal Horticultural Society, September 20th, 1904, and on December 8th, of the same year it was exhibited by Dr. Hodgkinson at the Manchester Orchid Society, when an Award of Merit was granted. M. Rimestad also met with it in Java, and sent plants to Europe, one of which flowered in the collection of M. Firmin Lambeau, of Brussels, in October, 1904. This species is allied to the Sumatran Cypripedium Chamberlainianum, but differs

CYPRIPEDIUM GLAUCOPHYLLUM.

in having broader leaves, which are glaucous and with scarcely a trace of the mottling seen in the older species. The petals are distinctly hairy, as seen in the illustration, besides being of different colour. The flowers are borne in racemes on a gradually elongating spike, as in C. Chamberlainianum and C. Victoria-Mariæ. The dorsal sepal is light green, somewhat veined and suffused with dusky-brown in the lower half, and the margin cream-yellow, while the petals are cream-white, with reddish-purple markings. The lip is clear light purple, with an obscure trace of darker spotting, and a cream-yellow margin and side lobes, with a few light brown spots on the latter. The staminode is dusky-brown with a light green base.

AN AMATEUR'S EXPERIENCE.

BY JOSEPHINE WALKER.

ONE thing noticed with the Monkey House, is that although in winter and spring, when the fire heat is constantly on, it will grow Dendrobiums, and force other plants into growth admirably, now that we do not employ heat in the day time, because the temperature is practically the same as that of the large house, there is a damp clammy feeling, owing, I suppose, to the fact that the rays of the sun cannot reach it through the outer glass and the intervening space in the large house. The consequence is, we have had to bring out the Dendrobiums, and find a position for them in the large house. Some of the imported Dendrobiums are very uncertain about starting. We have some plants of D. fimbriatum and D. Brymerianum which are not yet established, and for months we have tried every spot around the place to encourage them to root, but without success; finally, we decided to try them in the cradle, in the lantern roof with the Vandas, and now they are both rooting splendidly. It only shows how close observation of the plants is necessary. We have a plant of D. infundibulum, which was purchased in the imported state a couple of years ago. Now this is a cool-growing species, and supposedly easy to cultivate. We grew D. Jamesianum fairly well, and it is a close brother from the same district. But with every device we failed to stimulate it into growth, and in desperation it was put in among some Cattleyas against the white tiled wall, in the full glare, or blaze, of the sun, where it has at last decided to root and grow splendidly. So, if for some reason, a plant is not growing as desired, and all other points have failed, try it with a trip round the house in different positions. The plant's response to a favourable place will very soon be apparent to the careful observer.

There is a point I should like to make perfectly clear. In some of my articles I have mentioned the success we have obtained with plants purchased at various sales during our years of growing Orchids. I did this in the first place, with the sole idea of proving a certain point—that not only is it possible to grow Orchids successfully in a conservatory, but that it is possible to do so with plants that are in the last stages of neglect. My husband says this is capable of being misinterpreted, and bring down upon my head anything but blessings. He says, just imagine what hope an ordinary amateur would have with the majority of such plants we have so bought. In the first place, he would not know what to do with them, and after keeping them for a year, if they survived so long, he would consign them to the dustbin, and with the remark—if that is Orchid growing, not for me, thanks! Perhaps the view is right, and to make it still clearer, it must be remembered that my husband and I have spent many years on the hobby, and have read, and re-read, nearly all the

standard works on the subject, have visited many of the famous collections, both trade and private, and have studied all their various methods of cultivation. In many cases we have asked questions we ought not to have done, but I must say, in fairness to the trade growers, they are most willing to impart so-called trade secrets. Surely it is to their benefit to assist amateurs in every possible way towards making their hobby a success.

And the most important fact of all—our conservatory opens from the dining room, and I am in and out sometimes twenty or thirty times during the day. It is this constant attention, coupled with a very sound theoretical and practical knowledge, which brings success. Therefore, I say to my fellow amateurs: If you are going to try Orchids, do so with a few strong and robust plants bought from a dealer of repute. Lay your facts before him, and he will guide you fairly as to the sorts that are suitable for your particular conditions. It must not be forgotten that we have had many, many failures. I often wonder if it is worth while buying these derelicts, and to spend years of endless care nursing them back. However, there it is and we have gone through without regrets, but would like the position as regards these notes to be perfectly clear.

All our plants are rooting and growing splendidly, especially the Vanda family in the cradle in the roof. Those on the blocks are breaking from all the old aerial roots, and also the stems. We have also Aërides crispum and A. affine, on blocks rooting splendidly in the Monkey House, along with a plant of Rhynchostylis retusa, also on a block of wood. This latter plant was very sad, but is now coming away splendidly. Some of these imported species take quite a lot of time and attention. My husband and I spent a very delightful afternoon last month going through the collection of Messrs. Mansell & Hatcher at Rawdon. We were very impressed with the cleanliness and robust vigour of all the plants, and we laughingly admitted that though we looked for insects and scale, they were both absent. What interested us very much were the thousands of seedlings in all stages, from the seed germinating on the moss to those with the first bloom just open. And oh, what patience! Imagine two thousand seedlings in pots about the diameter of a shilling which for the next two years require attention so many times a day: 365 days in the year, for the one you missed may be fatal, and these if they are grown well will bloom in five years! And then what? It must take a lot of these fifty guinea plants to pay the coal bill and expenses, to say nothing of the people who have their capital sunk in these trade collections, because, as can easily be imagined, it is no use crossing parents which are not of great merit, and these alone cost considerable money. My husband says commerce is bad enough at present, but it will have to be a lot worse before he starts growing Orchids commercially.

THE AMATEUR'S PAGE

THE fact that manure in some form or other is beneficial to the majority of garden plants frequently causes amateurs to consider its use in the cultivation of Orchids. But all experiments have proved that Orchids do not prosper for long when so treated. The professional grower, whether he be a trade grower or a man in charge of an important private collection, has long since learnt that the finest desired results are obtainable without the use of manurial stimulants. Instances have more than once been known of the ground within the houses being soaked twice a week with manure water during the growing season, and this in the belief that the plants obtained much of their required food from the atmosphere. This practice of making the Orchid house anything but attractive to the owner and visitor has, we are glad to say, practically died out.

But one still hears occasionally of an amateur who gives his plants weak doses of manure water, and to him a warning is necessary, for the apparent good effect is invariably followed by serious consequences. This so-called satisfactory culture is in effect similar to a few strokes of the whip to a tired horse, the immediate increase of energy being followed by a further degree of impoverished condition. Some of the Oncidiums are notoriously difficult to cultivate for any length of time, and experiments conducted with O. varicosum showed that when manure water was applied the growth became more vigorous, but only for a short period, after which the plants dwindled rapidly and were eventually destroyed. Of the rare cases in which a little stimulant gives good results mention may be made of large specimen Cymbidiums that have entirely filled the pots with roots, and of Calanthes in vigorous growth, although it should be stated that several gardeners, much to their credit, achieve excellent results with no more than the fibre and loam compost usually recommended for this class of easily-grown terrestrial Orchid.

It is the practice of some cultivators to follow as closely as possible the atmospheric conditions under which certain Orchids live in their natural home. Bearing in mind the fact that many of them are known to inhabit forests, a bed of oak or beech leaves is sometimes placed under the staging. Whatever the effect of these decomposing leaves may be, they certainly make a splendid hiding place for all manner of slugs and insect pests, and on that account it is questionable whether their use is on the whole beneficial. Some cultivators are strong believers in having freshly dug soil under the staging, and even if this is not renewed yearly it should certainly be turned over occasionally. Sour soil in a house is not conducive to a light and sweet smelling atmosphere.

One of the principal difficulties experienced during the hot summer weather is to keep the Odontoglossum house sufficiently moist. A rather

novel method, and one that is worthy of being used more extensively, was seen last year in an amateur's house in the south of England. Coarse tiffany material, such as might be used for shading, was suspended along the edge of the staging, and when saturated with water kept the atmosphere continually moist. Each morning, and often again at mid-day, the watering pot was used to moisten this material, for with the ventilators under the staging wide open there was a constant current of air, and evaporation took place rapidly. Old sacking might be similarly used. When the door of a cool house opens into a corridor there is often an opportunity for ventilating the house by leaving it open, so long as the atmosphere in the corridor is fairly cool and moist. But when the door opens directly to the outside it is not advisable to allow the hot dry air of a sunny day to blow directly on to such plants as Odontoglossums, and an excellent preventitive measure is to make a light frame of similar size to the doorway and cover it with coarse tiffany or other canvas material which can be moistened as occasions arise.

MAXILLARIA TENUIFOLIA.—This plant flowered for the first time under cultivation in the Horticultural Society's garden at Chiswick, having been sent there by Hartweg, who discovered it in 1837 in the vicinity of Vera Cruz. The ascending rhizomes carry pseudobulbs at intervals of about an inch. The flowers are deep sanguineous red to beyond the middle, the apical area yellow with leopard-like red-purple spots. In the Burford Lodge variety the flowers are yellow spotted with red, the spots on the petals and lip larger and deeper than those on the sepals.

CATTLEYA TITYUS.—When this hybrid was first flowered by Messrs. Charlesworth & Co. in 1912 it was immediately accepted not only as an elegant result, but as a plant that would prove of considerable utility. The ten years that have since elapsed have more than proved this prophecy. An analysis of the two parents shows that in C. Enid (Mossiæ × Warscewiczii) and C. Octave Doin (aurea × Mendelii), four well-known species are included, all of which are individually beautiful and highly esteemed. Among the hybridists who realised at an early date that C. Tityus would prove to be a fine parent were Messrs. Flory & Black, and three of the new hybrids recently raised by them are descendants of it. The best, so far flowered, is Cattleya Dr. M. Lacroze (Octave Doin × Tityus), of excellent form and substance, the sepals and petals unusually dark, and the large round labellum of rich purple. Two other promising hybrids are Cattleya G. P. Walker (Mendelii × Tityus), and C. Heatherwood (Mossiæ × Tityus).

THE LATE MR. ABNER HASSALL.

WE very much regret to record the death on June 15th of Mr. Abner Hassall, after a very short illness. Born in Manchester, where he commenced his business career, he removed to London when quite a young man and became actively engaged as a manufacturing chemist. Mr. Hassall's connection with Orchids goes back to 1898, in which year he was

THE LATE MR. ABNER HASSALL.

attracted by a sale at Messrs. Protheroe and Morris' Rooms and became the possessor of a few plants. During the following year he purchased Orchids from Messrs. Stanley, Ashton & Co., Southgate, and at his residence at Bowes Park, within a couple of miles from their nursery, he formed a small, but select collection. In 1900 he became financially interested in this Orchid firm, Mr. Stanley going abroad for the purpose of collecting plants. Immense importations were received of Odontoglossum crispum, of which the handsome blotched variety called Abner Hassall gained an Award of Merit at the Temple Show of 1901, and subsequently realised the high sum of 470 guineas at a sale of duplicate plants from Mr. H. T. Pitt's collection

in 1906. Large importations were also received of Cattleya labiata, C. Gaskelliana, C. Schroderæ and C. Mossiæ, while from Southern Brazil came continuous consignments of Lælia purpurata and various Oncidiums. Among the fine varieties which resulted from these collections were C. Lueddemanniana "Abner Hassall," exhibited at the Royal Horticultural Society, Jan. 23rd, 1900, and C. Mossiæ Wageneri "Hassall's variety," to which an Award of Merit was given when exhibited at the Temple Show of the same year. Other meritorious plants were seen in Oncidium Stanleyi, a supposed natural hybrid between curtum and Marshallianum, and in Cattleya Harrisoniana "Stanley's variety," to which a First-class Certificate was given when exhibited at the Royal Horticultural Society, 1908.

In 1909 Mr. Hassall became sole owner of the business, which since 1911 has been known as Hassall & Co., with Mr. John C. Cowan as manager. The importing of Orchids was then practically discontinued, and hybridising and seed-raising became the principal work. Some idea of the success achieved by this firm may be gained from the fact that during the last twelve months hybrids raised by them have been awarded three First-class Certificates and one Award of Merit from the Royal Horticultural Society, and twenty First-Class Certificates and six Awards of Merit from the Manchester and North of England Orchid Society.

Mr. Hassall, who was in his 70th year, and leaves a son and three daughters, was intensely interested in Orchids. He was always busy and full of energy, but found the necessary relaxation from his other business by spending much time amongst his dearly loved plants. His genial disposition endeared him to everyone with whom he came in contact. The funeral service took place at St. Michael's Church, Bowes Park, and the interment at Christ Church, Old Southgate.

LYCASTE LASIOGLOSSA.—This rare species was introduced from Guatemala by Messrs. Veitch in 1871. An interesting feature in connection with its large flowers is the shaggy margin to the lip, not unlike that seen in the Paphinias, and from which the specific name is derived.

CATTLEYA WARSCEWICZII VAR. FIRMIN LAMBEAU.—This species was originally described by Reichenbach in the year 1855 from plants collected by Warscewicz, but it is more generally known as Cattleya gigas, a name first applied to it in 1873. Many very handsome varieties have from time to time appeared, and the beautiful pure-white variety known as Firmin Lambeau is a highly prized rarity. Last month a fine specimen plant of it in the collection of Arthur N. Cooley, Esq., Pittsfield, Mass., U.S.A., carried five well developed flowers, and Mr. Oliver Lines, who is in charge of the collection, has since made several albino crosses with it.

LÆLIOCATTLEYA KENNIE.—That Cattleya Gaskelliana has been the means of adding many beautiful hybrids to our collections cannot be doubted when we consider such plants as C. Lord Rothschild (Gaskelliana × aurea), C. Suzanne Hye (Gaskelliana × Mossiæ), and C. Mrs. Myra Peeters (Gaskelliana × Warneri), each of which has also been raised with the alba variety of Gaskelliana. One of the most recent results exists in Læliocattleya Kennie, obtained by crossing C. Gaskelliana with Lc. Gladiator (C. Mossiæ × Lc. callistoglossa), and raised by Messrs. Flory & Black in 1920. A very beautiful variety of it has been flowering during the last few weeks in the collection of J. Frederick Phipp, Esq., Devizes, Wilts

AUTUMN CHALLENGE CUP.

THE Challenge Cup shown above, and valued at 20 guineas, is to be awarded at the Autumn Orchid Show of the Royal Horticultural Society for the best group, not exceeding 60 square feet, exhibited by an amateur who does not employ more than three assistants, including the head gardener.

R.H.S. GREAT AUTUMN SHOW.—The Royal Horticultural Society announce that the Great Autumn Show will be held at the Holland Park Skating Rink, Holland Park Avenue, London, W., on October 3rd, 4th, 5th and 6th (not October 4th to 7th as at first announced).

YORKSHIRE GALA.

ON June 14, 15, and 16, the Grand Yorkshire Fower Show and Gala celebrated its diamond jubilee, and Orchids, as in the past, were well represented. The proceedings opened in beautiful weather, which made conditions in the flower tent delightful.

Messrs. Mansell & Hatcher were awarded a Large Gold Medal for a group of Orchids consisting mainly of hybrids, of which Læliocattleya Fascinator and Lc. Canhamiana were especially attractive. A beautiful collection of Miltonias were also included, and this firm deserve special praise for the artistic grouping which displayed almost every plant to perfection. Messrs. Mansell & Hatcher also secured the Silver Cup presented by Messrs. Felton & Sons for the best specimen plant in the show, which proved to be Cœlogyne pandurata. This Orchid drew the attention of all the people, and also charmed Mrs. Asquith.

Messrs. Sanders received a Gold Medal for an excellent group containing some fine plants of the beautiful Cattleya citrina, still regarded as one of the purest of yellows. Phaius Cooksoniæ var. excellens, a cross between grandifolius and Humblotii, made a fine effect, its tall spike of long-lasting nature proving how useful these plants are. The new hybrids comprised Odontioda Duke of York (Oda. Brewii × Odm. excellens), very attractively marked, Odontoglossum Gala, resulting from the crossing of nebulosum with harvengtense, and O. Magpie, a pleasing hybrid between eximium and Magali Sander.

Messrs. Cypher & Sons were awarded the First Prize of £12 for a table of Orchids, all most effectively arranged. This firm were also fortunate in securing similar prizes for the best dozen specimen plants, the best six, and the best three. For the best specimen Orchid in flower, Messrs. Cypher were easily first with a grand plant of Læliocattleya Canhamiana Rosslyn var., carrying a spike of four finely developed flowers. They also showed a fine specimen of Dendrobium chrysotoxum with over 150 blooms.

Messrs. A. J. Keeling & Sons obtained several Second Prizes, and in a very pleasing group they included a fine plant of Odontioda Lambeauiana var. St. Dunstans, carrying two spikes of a charming colour.

In the classes for amateurs, Joseph Rowntree, Esq., Clifton Lodge, York, won First Prizes for three Orchids, and one Orchid. Messrs. R. Felton & Sons, Hanover Square, London, obtained numerous awards for their exceedingly fine examples of floral decoration; the bridesmaid's bouquet being composed of white Cattleyas and Odontoglossum crispum xanthotes, a delightful combination. Messrs. Felton were placed first for a handsome bowl of Orchid flowers, which included richly coloured Odontoglossums and Cymbidiums.

J. W.

ROYAL HORTICULTURAL SOCIETY.

June 6th, 1922.

MEMBERS of the Orchid Committee present :—Sir Jeremiah Colman, Bart. (in the chair), Prince Tadashige Shimadzu, Messrs. J. O'Brien (hon. sec.), Pantia Ralli, Gurney Wilson, H. T. Pitt, C. H. Curtis and Fred. J. Hanbury.

FIRST-CLASS CERTIFICATE.

Odontonia Merope vivicans (M. Bleuana × O. illustrissimum); from Messrs. Charlesworth & Co. This remarkable hybrid carried a single flower, of neat formation, and closely resembling the Miltonia parent. It has all the segments equally well coloured with rosy-mauve tints, and when fully developed will constitute a praiseworthy addition to the cool-growing section.

GROUPS.

Messrs. Charlesworth & Co. were awarded a Silver Flora Medal for a fine group, containing some specially good varieties of Læliocattleya Canhamiana, all remarkably well flowered. Also numerous hybrid Odontoglossums, of which O. Wilckeanum aureum, with a spike of fourteen golden flowers was attractive. Several Miltonia hybrids and some interesting Brassocattleyas made bold areas of colour, and among the species was a good example of the green Cypripedium callosum Sanderæ.

H. T. Pitt, Esq., Stamford Hill (gr. Mr. Thurgood), staged a fine assortment of species and hybrids, a Silver Banksian Medal being awarded. Included in it were the rich yellow-flowering Dendrobium chrysotoxum, a strong plant of Anguloa Clowesii, Cypripedium barbatum nigrum, a very dark form, and several finely flowered Odontoglossums.

Messrs. Flory & Black obtained a Bronze Banksian Medal for a group, in which were several novelties, among them being Cattleya Dr. M. Lacroze (Octave Doin × Tityus), richly coloured on all the segments, and with the lip bright purple. Other interesting hybrids were Cattleya G. P. Walker (Mendelii × Tityus), a fine variety of Lc. Fascinator with a spike of five flowers, and a good example of Cattleya The Bride, with pure-white flowers.

Messrs. Hassall & Co. staged Cattleya Everest (Mossiæ Wageneri × Magali Sander), with two fine flowers of thick texture and pure-white.

CATTLEYA PEETERSII.—The reproduced photograph on page 223 shows the Westonbirt variety of this handsome hybrid between C. labiata var. G. G. Whitelegge and C. Hardyana alba. The sepals and petals are white, and the labellum deep rose veined with yellow at the base. It was exhibited at the Royal Horticultural Society by Lieut.-Col. Sir George Holford, K.C.V.O., on November 5th, 1912, when a First-class Certificate was awarded.

MANCHESTER ORCHID SOCIETY.

AT the Annual Meeting of the above Society, held on May 11th, the following Prizes were presented:—J. J. Bolton's Gold Medal for Cypripediums, to S. Gratrix, Esq., with a guinea to his gardener, Mr. J. Howes; and the Bolton Silver-gilt Medal for Cypripediums to Mrs. Bruce and Miss Wrigley, with a guinea to their gardener, Mr. A. Burns. The Royal Botanical Society's Silver-gilt Medal, to Mrs. Bruce and Miss Wrigley whose gardener obtained the most points in Cultural Certificates; the Society's Silver Medal in this section going to S. Gratrix, Esq. Dr. R. N. Hartley's prizes in connection with the preceding were awarded 1st to Mr. A. Burns, 2nd to Mr. J. Howes, and 3rd to Mr. G. Giles.

Charlesworth's Objet d'Art, for new awards, Cypher's Gold Medal for the most points gained in general excellence and arrangement of group, and Evans' Silver Trophy for Odontoglossums, were all won by S. Gratrix, Esq. and the gardener's prize in connection with the same, to Mr. J. Howes.

The Gratrix Silver Cup, for the most points gained during the session for Odontiodas, went to A. Hanmer, Esq., and the prize of two guineas to his gardener, Mr. G. Giles.

A. Hanmer's Silver Cup for the amateur who gained the highest number of points for groups and individual plants was awarded to S. Gratrix, Esq., and the two guinea prize to his gardener, Mr. J. Howes. The Hassall Trophy for Cattleyas and their hybrids also went to the last mentioned amateur. The stuart Low Gold Medal for home-raised seedlings was awarded to the Rev. J. Crombleholme, and the Silver-gilt Medal in the same section to Mrs. Bruce and Miss Wrigley. Capt. Horridge's Prizes in connection with the preceding were awarded first to Mr. E. Marshall, and second to Mr. A. Burns. The McBean Trophy for the amateur who gained the highest number of points during the session for Cymbidiums went to the Rev. J. Crombleholme, whose gardener secured the money prize of two guineas. The money prizes presented by P. Smith, Esq., to the gardener who exhibited the greatest number of groups were first prize of three guineas, Mr. J. Howes; second of two guineas, Mr. A. Burns; and the third of one guinea was divided between Mr. G. Giles and Mr. E. Marshall.

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May 11th, 1922.

Members of the Committee present:—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, B. J. Beckton, J. Birchenall, A. Burns, A. Coningsby, D. A. Cowan, J. C. Cowan, J. Cypher, A. G. Ellwood, J. Evans, W. Giles, A. Hanmer, J. Howes, A. Keeling, D. McLeod, J. Thrower, E. W. Thompson and H. Arthur (secretary).

CATTLEYA PEETERSII, WESTONBIRT VARIETY (*see p.* 221).

A Gold Medal was awarded to S. Gratrix, Esq., for a group of Odontoglossums in great variety. A Silver-gilt Medal was given to A. Hanmer, Esq., for an exhibit of Odontoglossums and Odontiodas, and a Large Silver Medal to Messrs Cypher & Sons for a group of Cattleyas in variety.

FIRST-CLASS CERTIFICATES.

Od. crispum Earl Balfour, a fine variety of the Doin type; Od. crispum Queen of the May, of similar type, rose-tinted; Blc. Lady Rachel var. Ivorine, white flower with rose blotch on lip; from Mrs. Gratrix.

Od. Doreen var. Queen of the Belgians, large flower, blotched reddish-brown; Od. Colossus, perfect shape and heavily blotched; Blc. Joan var, Golden Aureole var. Jove, mauve colour with magenta lip; from Mrs. Bruce and Miss Wrigley.

Od. eximium rotundum, broad sepals and petals, blotched with reddish-brown; from P. Smith, Esq.

AWARDS OF MERIT.

Od. crispum Mary Regina; Od. Pescatorei Gratrixiæ; Bc. Andre Maron; Lc. Vesuvius var. flammea; from S. Gratrix, Esq.

Bc. Pink Pearl; Bc. Hon. Mrs. Fitzroy; Cattleya Irene var. grandis; from Mrs. Gratrix

Od. Conqueror var. Illustrious; from P. Smith, Esq.

AWARDS OF APPRECIATION.

Od. crispum Duchess of Athlone; Od. crispum Cecelia; Od. Rosina; from S. Gratrix, Esq.

DENDROBIUM CLARENSE.—The parents of this pretty hybrid are Findlayanum and signatum. It was raised in the collection of Sir Frederick Wigan, Bart., Clare Lawn, East Sheen, by Mr. Young, and first flowered about the year 1903. The sepals and petals are yellow, with a faint trace of pink at the tips, and the lip bears some radiating lines on either side of the claw.

RODRIGUEZIA SECUNDA.—This species was originally introduced from Trinidad about the year 1818, but it had been discovered many years previously by Humboldt and Bonpland in Northern Colombia growing on the trunks of the Calabash tree. The brothers Schomburgk, during their exploration of British Guiana in 1840-44, found it pretty well distributed over the whole country. It is also common around Para in Brazil, where it is found upon the Mango trees, and Mr. E. S. Rand has stated that he found it to be almost the only Orchid growing within the city itself. The pseudobulbs are oval-oblong, compressed, 1½-2 inches long, and single leaved. The arched racemes bear rose-pink coloured flowers, which are all turned in one direction; hence the specific name.

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NOTES.

DENDROBIUM AMŒNUM.—It is not often that an Orchid can be said to be violet-scented. D. amœnum has this character, and consequently appears worthy of wider consideration. It is a native of the North Western Himalaya, and bears flowers having the sepals and petals white, tipped with violet, the lip white, tinged with yellow and with a purple spot.

LÆLIA HARPOPHYLLA.—At one time this species was frequently to be seen in collections, its many-flowered spikes of orange vermilion making a pleasing contrast to the mauve colour of the larger flowering species of the labiata section. It is a native of Southern Brazil, and has slender, terete stems about a foot in height, the leaves lanceolate, acute, and dark green. Several hybrids have been raised from it, but they are by no means so sought after as the species itself is at the present time.

DENDROBIUM PRIMULINUM.—This species has on several occasions been described as a native of the lower Himalayan zone in Nepaul and Sikkim, but some doubt having been expressed concerning the accuracy of this statement, so far as the locality Sikkim is concerned, the following note by the Mr. J. F. Duthie (*Orch. N.-W. Himalaya, p.* 97) is of interest: "There has been considerable misconception in regard to the distribution of this species. Under D. crepidatum in the *Fl. Br. Ind, v.* 740, Sir Joseph Hooker remarks, 'A specimen in Hort. Kew, marked Garhwal, Falconer, is perhaps a cultivated one.' This evidently refers to the two specimens of D. crepidatum glued down on the same sheet with Falconer's specimens of D. primulinum, and all of them named D. cretaceum on the Kew Distrib. ticket No. 1005 by Reichenbach f. subsequently. There is also on the same sheet an original ticket of Falconer's, referring to the specimens of D. primulinum, and bearing the manuscript name of 'D. petrocarpum.' Both D. primulinum and D. crepidatum were found by Falconer in Garhwal, and they were no doubt cultivated in the Saharanpur Garden, and sent thence to Kew under one name. The supposition that D. primulinum was ever found wild in Sikkim is probably an error."

VARIETIES OF CŒLOGYNE CRISTATA.

IT is pleasing to notice that some of the Orchids that were plentifully cultivated years ago, and, in fact, so much so that not a few amateurs discarded them for rarer plants, are again coming into favour. Ten or more years ago, Cœlogyne cristata was difficult to dispose of, and for want of purchasers many plants must have been destroyed. But those amateurs who have recently commenced Orchid culture find this good old species quite worthy of inclusion in their newly-formed collections. C. cristata is one of those easily-grown plants that is often seen flowering freely in an ordinary greenhouse during the winter months. Any extra care, such that a keen amateur is accustomed to give his plants, is well rewarded by the production of handsome specimens, with an accompanying increase in the number of flowers.

Cœlogyne cristata was originally discovered by Dr. Wallich in 1824. It is a native of the lower Himalayan zone, at elevations ranging from 4,500 to 7,500 feet. It was introduced by Gibson in 1837, but does not appear to have flowered in England until the spring of 1841. The flowers, borne on drooping racemes, are pure white, except for the orange-yellow disc and keels on the lip.

The Arnigadh variety owes its name to its having been collected at that place. Plants sent to Kew from the Botanic Garden at Saharunpore in January, 1886, showed that the sepals and petals were plain, not crisped, as in the type. In the variety hololeuca the flowers are entirely white, not a trace of yellow is to be seen on the disc and keels of the lip. It is figured under its better-known name alba in the *Orchid Album*, *II.*, *t.* 54, where it is stated to have first flowered with Mr. T. A. Titley, Gledhaw, Leeds, and afterwards to have passed into the hands of Mr. Wm. Bull, of Chelsea. A variety having the fringed keels on the lip of citron-yellow has long been known under the distinguishing name Lemoniana, not in allusion to the yellow colour, as is sometimes thought, but after Sir Charles Lemon, in whose collection it appeared before the year 1881. This variety is said to be identical with the C. cristata citrina which was in the celebrated collection of Mr. John Day, of Tottenham. In Day's variety the colour is intermediate between citrina and that of the type. The fine variety distinguished as maxima is figured in *Reichenbachia I.*, *t.* 6. The sepals and petals are broader and stouter, and the flowers altogether larger and superior to the type. A later flowering variety has been recorded as the Trentham form. It appeared in the Duke of Sutherland's collection, and the flowers are said to be produced six to eight weeks later than other varieties. Nearly thirty years ago there was a variety with a pale primrose-coloured disc in the collection of Mr. R. H. Measures, Streatham.

CYPRIPEDIUM GODEFROYÆ.

THE elegant plant known as Cypripedium Godefroyæ has always been a subject of interest, for soon after its first appearance questions regarding its specific character arose and have been periodically discussed. It fell to the lot of an Englishman named Murton to discover this Cypripedium, and he sold plants to M. Godefroy, who called at Singapore on his return journey from Cochin China in 1876. Murton, however, died before the plants were despatched to Europe, consequently they were put in charge of another Englishman named Alabaster, but he, falling ill, was

CYPRIPEDIUM GODEFROYÆ LEUCOCHILUM.

unable to attend to them and they all perished. On recovering his health, Alabaster procured more plants which he forwarded to M. Godefroy. These were collected on the cliff of a limestone island near the Bird's Nest Islands of Champon, Siam, and in a situation where they were fully exposed to the glare of a tropical sun, the difference between the extreme day and night temperature being considerable.

Our illustration is of a fine variety flowering in the well-known collection of Richard Ashworth, Esq., Newchurch, Manchester. It will be noted that the lip is unspotted in this example, which belongs to the section

called leucochilum. It received a First-class Certificate when exhibited by Messrs. Sanders, R.H.S., July 1906. Some varieties have the lip spotted similarly to the other segments. These plants are still much sought after by amateurs, and in a fine importation of C. Godefroyæ recently received by Messrs. Sanders, both sections are included, as is proved by some white, and also spotted, lipped varieties flowering prematurely long before the plants have had time to establish themselves. The wide variation seen gives much hope for the discovery amongst them of not a few really fine and distinct varieties. One may recall the variety citrinum, which received an Award of Merit, R.H.S., in 1905, also the Hessle variety, F.C.C., R.H.S., 1902, and the fact that no less than ten awards have been given on different occasions to this Cypripedium by the Royal Horticultural Society proves that varieties of merit undoubtedly occur.

Cypripedium Godefroyæ, C. bellatulum, C. concolor and C. niveum are closely allied, and in a very interesting article by Dr. Miles Johnston which appeared in the *Orchid Review*, August, 1910, details of their successful cultivation are given. For the benefit of new subscribers we repeat the following: "In potting C. bellatulum I like a rather deep pot, for pots under 6in. I generally use 'long thumbs.' In a six inch pot I place lumps of old mortar, the larger the better, to a depth of about 1½ in. (this may be increased), securing the drainage with a thin layer of fibrous loam. I then build up in the centre a pile of lumps of mortar, of ½in, to 1½in. diameter, and loam, the latter being mixed with 2 to 3oz. of mortar crushed to sand size. I prefer a sandy clay loam, but I have used good fibrous loam or a mixture of these with good results. I pot rather firmly, but do not allow the loam to be squeezed into dense lumps. The mortar is soaked for a day or two in water before use. I make the surface of the compost about ½in. below the rim and allow it to rise a little in the centre. The plants should be so arranged that the point from which new roots may be expected to spring is at, or very little below, the surface. The compost (excluding drainage) should consist of about one half lumps of mortar and one half loam. Moss, whether in or on the surface of the compost, is bad for the plants. Chalk may be substituted for the mortar, but I believe the latter is better. C. concolor, C. Godefroyæ and C. niveum grow very well with a slight modification of the above method. For these I use smaller and deeper pots in proportion to the size of the plants than for bellatulum. More than three-quarters of the potting material consists of lumps of mortar. The remaining quarter, used only for filling in the spaces between the lumps of mortar and for lightly surfacing, is a mixture of loam two parts, chopped oak leaves one part, and crushed mortar one part." An interesting article on the bellatulum-niveum group, by Mr. Harold Raven, appeared in our March issue of the current year.

OBSERVATIONS ON THE CAPACITY OF ORCHIDS TO SURVIVE IN THE STRUGGLE FOR EXISTENCE.

BY OAKES AMES, F.L.S., BUSSEY INSTITUTION, HARVARD UNIVERSITY.

IF we visualize the sequence of the flowering plants from an evolutionary point of view as a genealogical tree, the branches of which represent the taxonomic concepts of botanical classification, we see one branch given over to those families which are grouped together as the monocotyledons. At the tip of this branch the family of the Orchids is placed as the most highly organized group, set apart, among other characters, by complexity of floral structure. In brief, among the grasses, palms, lilies and irises, to mention only four of the forty-five families that constitute the monocotyledons, the Orchids hold the loftiest position.

Although the Orchid Family is admitted to be one of the most complex concepts of the vegetable kingdom, we sometimes read or hear statements which lead us to believe that it is a decadent group. To those who derive pleasure from an intimate association with Orchids, either in greenhouses or in the field, and to those who unconsciously have come to regard these plants as highly organized products of evolution, it is indeed surprising to learn that anybody should suggest seriously that they are for the most part moribund species.

The outstanding characteristic of the Orchids that is regarded as a sign of decadence is lavish yield of seed coupled with sparse distribution. This seems to indicate a waning capacity to compete with more vigorous plants. Aside from this characteristic there are bits of accepted evidence which lead to the belief that Orchids have become so specialized that they are slow to adjust themselves to changes in their environment. They seem to be so delicately balanced in their relation to other organisms that they occupy a precarious position in the realm of living things. They are supposed to be unable to hold their own in keen biological competition and are consequently thought to be in danger of becoming extinct. They have been called end products. They have been mentioned by a recent writer as occupying the same position in the floral world that flamboyant motifs hold in the development of a national art. Just as flamboyancy in art has marked the passing of a civilization, so in the animal and vegetable kingdoms an excessive development of iridescence and fantastic excrescences indicates types of organic development that precede decadence and extinction.

Another peculiarity of the Orchids that inclines us to believe that decadence is not a purely hypothetical condition is their dependence on mycorrhiza. It has been claimed that the Orchid seed, under natural conditions, is incapable of passing beyond the embryonic stage unless

invaded by the hyphæ of a mycorrhizal fungus. When the seeds are disseminated they lie dormant until association with the necessary fungus is established. Whether or not there are numerous exceptions to this peculiarity has little to do with the case from the point of view taken by those authors who would have us believe that the Orchids are on the decline as a biological group. The relationship between the fungus and the Orchid has been termed luxury-symbiosis; an association that has been regarded as harmful.

When we attempt to analyse the evidence brought forward to prove that the Orchids are a decadent group: a group that has become so specialized that its members are unable to carry on a successful struggle for existence in the ordeal of biological rivalry, we find our knowledge sadly incomplete. Very few opportunities have been given us to ascertain just how moribund the Orchids are. That is, we do not surely know that extinction is prevalent among them, nor are we aware from numerous observations how readily Orchids spread to new land areas when equal opportunities in competitive distribution are offered. We are unable to postulate, from repeated investigations made in different parts of the globe, what position the Orchids really hold among the families of plants that are characterized by the capacity to occupy new land and become an established element in the formation of a flora. We simply find it possible, in the majority of cases, to draw conclusions from observations of what is practically a static condition. Because many species of Orchids are rare, notwithstanding their prodigality in seed yield, we infer that they have lost the ability to win out in a conspicuous degree when subjected to competition. Rarity is evidence of a losing contest; at least it is a condition from which to argue that inability to spread is bound up with tendencies toward extinction.

When in August, 1883, one of the most stupendous volcanic outbursts of historic times devasted the small group of islands situated in the middle of the Sunda Strait between Java and Sumatra, keen interest was taken by botanists in the re-vegetation of the sterilized land masses of Krakatau, Verlaten and Lang Islands. These islands, immediately after the disturbance which covered the whole neighbourhood for a distance of twenty-two miles with glowing stones and hot ashes, were without a vestige of life. Their vegetation had been completely exterminated. Here an exceptional opportunity was offered for the study of the formation of a new flora under conditions that represented equal chances for invasion of the islands and possession of sterilized ground.

As plants began to find congenial conditions for growth on Krakatau, and as the formation of a new flora was well under way, Orchids made their appearance. Fifteen years, or thereabouts, after Krakatau was again

habitable, several Orchids were noted among the successful immigrants, the vanguard of the family being formed of Vanda Sulingii, Bl., Cymbidium Finlaysonianum, Lindl., Arundina Speciosa, Bl., Spathoglottis plicata, Bl., and a species of the genus Phaius. From this observation it would seem that Orchids are perfectly capable of entering into successful competition, and, under favourable conditions, are quite able to hold their own in a free for all combat.

Orchids are well adapted to dispersal by the wind; consequently when we examine the new-born flora of Krakatau it is well to concentrate attention on those species of plants whose seeds were undoubtedly blown there from Sumatra, Java and several other countries. In 1897, that is, about fifteen years after the volcanic eruption, we find that seventeen species, or thirty-two per cent. of the flora of Krakatau, arose from seeds that had been wind-borne. These seventeen species represented three families; eight were members of the Compositæ (Daisy Family), five were species of Gramineæ (Grass Family) and four were Orchids. From these figures we are able to draw some interesting and enlightening information. We find, for example, that the Orchids not only made up a large percentage of the immigrant flora that had reached Krakatau through the air, but they rivalled in successful seed dispersal two families of plants that are regarded as the most proficient in the perpetuation of their species. Their specific representation was much greater than that recorded for the majority of families that established representatives on Krakatau. With the exception of the Leguminosæ, which were comparatively numerous in the new strand flora, they about equalled in number of species the more prominent families of flowering plants.

At this point one begins to contemplate the part mycorrhiza played in the development of the Orchids on Krakatau, and to contrast what happens when a new area is opened to occupation in contradistinction to what takes place in an established, or shall we say balanced, flora. If Orchids are dependent for germination on mycorrhiza, as we believe now that they are, it is reasonable to presume that the Orchid seeds which reached Krakatau and germinated, were previously supplied with mycorrhizal fungi. That is, before reaching Krakatau they had perhaps rested for a time where mycorrhiza were present, and then, after inoculation, they had been blown to their final resting place. This is not a preposterous proposal. Indeed it is a perfectly logical assumption.

Although Orchids are classed among those plants which owe their dispersal to the wind, their seeds are not provided with special apparatus for suspension in the air. The embryo is surrounded by a membranous covering which is a structural adaptation that simply ensures buoyancy. In seed dispersal over great distances by the wind, reduction in weight is more

important than structural adaptations for flight. Together with the spores of ferns and other cryptogams, very light seeds are easily transported by the ordinary tropical monsoon. In winds which reach a velocity of ninety-eight feet a second, special apparatus is unnecessary for transport of seeds of excessive lightness. In the Indo-Malayan region, winds that reach this velocity are not infrequent during storms. The extreme reduction in weight that has rendered Orchid seed easily conveyable even by light winds is well exampled by Dendrobium attenuatum, whose seeds weigh only 0.0000065 gr.

To account for the appearance of Orchids on Krakatau, where it is scarcely probable that mycorrhizal fungi were present that could enter into symbiosis with them, one should bear in mind that slow germination is a striking characteristic of Orchid seeds. The seeds, when dehiscence of the ripe capsule takes place, may fall among the roots of the parent plant and in time become inoculated. If after this any of the inoculated seeds become dislodged by violent storms, it is conceivable that in the early stages of germination, even with their fungal freight, they might easily withstand a journey of from twenty to thirty miles without undergoing lethal desiccation. As evidence that such a supposition is not illogical, I offer my own experience with germinating seeds of Goodyera pubescens R. Br., transferred from colonies to my laboratory. Although these germinating seeds in detachment from the humus lost the characteristic and extremely delicate rhizoids of the protocorm stage of development (that is, the hair-like structures through which the fungal hyphæ retain connection with the humus), they quickly developed new ones, and in a petri dish placed under a bell jar on the laboratory window-sill they made substantial growth.

It is probable, then, that slow germination is an advantageous characteristic. It may be connected in some way with the adaptation of the species for dispersal by wind after germination has begun. This assumption is perhaps necessary, because the mycorrhizal fungus is not known to occur as an autonomous organism comparable to an omnipresent mold. It does not occur as a widely distributed fungus which simply lies in wait for the haphazard advent of wind-borne Orchid seeds with which it immediately initiates a symbiotic union. If Orchid seeds germinated quickly and gained weight rapidly; if the embryo immediately put forth roots and in a brief time secured a firm hold on the substratum, the likelihood of dispersal after the entrance of the mycorrhizal fungus would be diminished and opportunities for successful dispersal severely limited. Even after the fungus has entered the embryo, the seed is but a trifle heavier than it was at the time of dehiscence of the capsule in which it ripened. Adaptation of the seeds for purposeless flight would be a sad adaptation indeed.

Although we have found evidence to indicate that Orchids are by no means so incapable of holding their own in biological competition as the facts of distribution in a balanced flora have seemed to prove, we are still likely to be puzzled by the astonishing profusion of seeds per capsule and the sparse distribution characteristic of Orchids in general. And yet, it seems to me, that in profusion of seeds the Orchids overcome one of the chief obstacles in the way of success which their association with mycorrhiza created. Granted that our present day knowledge is trustworthy, profusion of seeds seems to be a *sine quâ non* if desirable distribution is to be achieved. Reduce the number of seeds and extinction would be almost inevitable, not because a low percentage of germinative capacity is characteristic of the Orchids, but because the mycorrhizal relationship demands a prodigality of seeds. Only those Orchid seeds enjoy a fair prospect of successful germination in places far removed from a flourishing Orchid population that have become inoculated after initial dissemination. For every seed that becomes inoculated millions must fall where there is no likelihood of symbiosis being established.

If, at this point in our discussion, we attempt to piece together briefly the probable story of the Orchids in evolution, basing our assumptions on what we now believe to be true in the life history of existing species, we begin with those ancestral forms which were characterized by the capacity to yield an abundance of seeds. These ancestral Orchids in the struggle for existence were attacked by a fungus. They not only withstood the attack, but emerged from it with profit. The fungus became a useful partner and a symbiotic condition was established. As the Orchids evolved, their seeds gradually lost the capacity to germinate without the aid of the fungus, that is, they lost the capacity to render the soluble organic compounds of the substratum assimilable. The accomplishment of this work became the function of the fungus. The fungus in the meantime became more and more dependent on intimate association with Orchids and gradually ceased to live autonomously for any length of time. It took on the peculiarity of passing from one generation of Orchids to another, rarely reproducing itself by spores. It ceased to carry on an independent existence. At this point a condition was reached which would militate against the success of the Orchids, because seeds which fell far removed from a parent plant would be unlikely to meet with the normal and indispensable symbiont. Such a condition would only be favourable to those Orchids which continued to yield a large number of seeds, and those species would be best adapted to successful competition which were characterized by an increase in seed yield and by slow germination. We find, for example, that it is not among the less highly differentiated species of the family (such as those of Habenaria, Orchis and Cepalanthera), that

high seed yield is conspicuous, but among the more highly developed species which belong to Maxillaria, Vanda, Grammatophyllum, etc.

As this capacity to yield seeds lavishly was developed, modifications were elaborated which prevented the serious drain on the vitality of the Orchid which seed production entails. The Orchids became characterized by the peculiarity of developing ovules only after pollination had taken place. Pollination not only stimulated the ovary to vigorous and often long-continued growth, but made the ovules capable of fertilization, and in some cases was the cause of their first appearance.

As we study into profuse seed yield in the Orchids we begin to see it as a highly specialized attribute, not as a sign of low organization. Even though profusion of seeds may be a relic of times when the Orchids were less highly organized than they are now, it has persisted. It is closely bound up with the mycorrhizal phenomena that have attained such deep significance in our studies of Orchid evolution.

What has happened may be termed an adaptation to sparse distribution. That is, the Orchids, although unable to take possession of large areas, because, as a result of symbiosis with fungi, they are adapted to sparse distribution, are in perfect harmony with the type of life they exhibit in a balanced flora. Open the way to new territory; and, as we have seen from our studies of the island of Krakatau, the Orchids are among plant immigrants to be reckoned with.

AWARD OF THE "WHITE" MEDAL.—The Massachusetts Horticultural Society has awarded the George Robert White Medal to Mr. A. C. Burrage, President of the Massachusetts Horticultural Society. This Medal, established in 1908 by Mr. G. R. White, of Boston, is awarded annually by the above Society to the person who has done the most in recent years towards the advancement of the interest in horticulture in its broadest sense. In 1914 it was awarded to Sir Harry J. Veitch.

OBITUARY.—We deeply regret to record the death, which took place on July 13th, of Dr. Fred Bedford, B.Sc., aged 43 years. But few amateurs have shown so much enthusiasm or acquired so many special varieties and rare botanical species as did the late Dr. Bedford during the last few years. He had only recently removed his collection from Fulford, York, to Marden, Kent, where an extensive range of glass had been erected. He will be greatly missed by the Orchid world, and especially by those who so frequently enjoyed his genial hospitality. The interment took place at Sleaford Cemetery on July 17th.

ODONTOGLOSSUM EURYDICE.

IT has frequently been stated that an Odontoglossum to be considered meritorious should have broad sepals and petals, and in support of this opinion the majority of certificated varieties certainly possess this qualification. If, however, the flowers are considered from a purely decorative

ODONTOGLOSSUM EURYDICE (CIRRHOSUM × HASTILABIUM).

point of view, then it must be admitted that really graceful effects are often produced by varieties in which the segments are narrower. Consequently, the Award of Merit given to O. Eurydice when it flowered in 1906 was a reward that marked the creation of an attractive as well as a decorative hybrid. It is the result of crossing the Ecuadorean O. cirrhosum with the

Colombian O. hastilabium, and thus links up two sections of the genus. Both parents usually bear numerous flowers on tall, branched spikes. In O. Eurydice, which was raised by Messrs. Charlesworth & Co., the ground colour is cream-white, the spotting red-brown, and the crest on the labellum yellow.

ORCHIDS OF YUNNAN AND NORTHERN BURMA.

NUMEROUS Orchids collected chiefly in the temperate and sub-alpine areas of S.W. Yunnan and the Burmo-Chinese frontier are described by Professor W. W. Smith, M.A., in a recent issue of "Notes from the Royal Botanic Garden, Edinburgh." The greater part of the material was collected by Mr. George Forrest and the remainder by Capt. Kingdon Ward and the late Mr. Reginald Farrer. The number of species added to the flora of the area—whether new species or new records—is considerable. It is stated that many well-known Burmese Orchids are represented in this corner of China, and are not found further north or east. Near Tengyueh, at an elevation of some 5,000 feet, a huge lava bed, overgrown by a dense matted jungle of shrubs and climbers, was found by Forrest to be rich in Orchideæ of pronounced Burmese affinity. Professor Smith says that what has been found on the Burmese side of the frontier can represent only a tithe of the alpine Orchid flora of the area. The Orchids obtained by Forrest during his expeditions in the years 1904-05, were dealt with by Mr. Rolfe (*Notes R.B.G. Edin.*, viii., pp. 19-29), and those resulting from the explorations of the year 1906, were identified and described by Dr. Schlechter in the same publication during 1912 (vol. v., pp. 93-113). The present paper, which deals with the collections made during the years 1912-1914 and 1917-1919, includes over eighty species.

Bulbophyllum hyacinthiodorum is described as a new species with flowers pure white or slightly tinged with green and having a strong fragrance identical with that of Roman hyacinths. Calanthe Wardii is a novelty which can be well distinguished from its allies by the twin axe-headed shape of the labellum. Cœlogyne Sanderæ has typically three parallel hairy keels on the labellum, but in the Yunnan specimen of Forrest there are only two. Dendrobium Wardianum, originally introduced from Assam in 1856, and subsequently from Burma in 1875, is now stated to be also found in China. A new species described by Professor Smith as Listera unguiculata is well distinguished by the remarkable labellum shaped like a pair of pincers. Vanda Bensoni has not previously been recorded from China, and of Zeuxine inverta it is remarked, "A very peculiar plant. The flowers are resupinate—the labellum forming a kind of hood over the flower. The form of the labellum is quite that of Zeuxine and not of Hetæria, which has a superior lip."

THE ORCHID COLLECTION OF CORONEL PEDRO F. M. AMORIM, BAHIA, BRAZIL.

THERE are several important collections in Bahia, varying, of course, in the number of plants, but all of interest to the lover of Orchids. Probably the largest is that owned by Coronel Pedro F. M. Amorim, Avenida de Brotas, Bahia, whose ardent enthusiasm has brought together a remarkable assemblage of Cattleyas and other warm-growing Orchids. There are, as may be expected, some very fine varieties of Cattleya labiata, ranging in size and form as well as in depth of colour. One special plant produces green coloured flowers, the sepals showing a little purple, and the throat golden. Among the white varieties are some superb plants at present not represented elsewhere. All the other Cattleyas of importance are to be seen in quantity, and also in remarkable vigour. They include Schröderæ, Trianæ, Mossiæ, Eldorado, Harrisoniana, Warneri, and many of the long-bulbed section, such as intermedia, Leopoldii, and Schofieldiana. During many years of collecting, a large number of pure-white varieties have been obtained, and these are much prized.

The Phalænopses include some fine examples of Schilleriana. These particular plants, it is said, were collected on the trunks, and not on the branches, of trees in the Philippines. There are also pleasing varieties of P. amabilis, which in this collection yield excellent spikes of large flowers. Among the Oncidiums one may discern the richly-coloured Lanceanum, the bright yellow concolor and flexuosum, as well as divaricatum, barbatum, and crispum, the latter being a difficult plant to cultivate in Europe.

Læliocattleya elegans is thoroughly at home, and the fine examples of this natural hybrid between L. purpurata and C. Leopoldii are always admired. It grows naturally on the coast of Brazil, and plants are even found on the rocks by the seashore. A fine selection of variously-coloured varieties has been obtained. There is a grand specimen of Batemania Meleagris—the flowers are about three inches across, waxy, the sepals and petals white at the base, yellow in the centre, and the apical half red-brown speckled with yellow, the fringed lip white with the apical area yellowish brown.

At the end of one house some thirty, or more, fine plants of Cattleya Trianæ alba are arranged so that they may be treated equally and prepared for the flowering season. Near by are about twenty plants of Cattleya amethystoglossa, which is also known under the name C. guttata var. Prinzii. In this same house is a pretty earthenware basket containing a well-cultivated plant of Anguloa Clowesii, with flowers of a bright citron-yellow colour, and the lip milk-white. Brazil is the home of Lælia purpurata so it is not necessary for a long journey to be taken in order to

obtain plants. A very fine lot of choice varieties has been secured of this fine old species, among them being some beautiful albino forms. Other members of this genus include autumnalis, albida, Jongheana, majalis and furfuracea, all of which grow exceeding well in the locality. Lælia anceps is also well represented, and its tall and graceful spikes of bloom bring forth much admiration.

The above mentioned plants are only a few of the numerous Orchids to be seen in this collection. In addition there are many examples of the genera Epidendrum, Phaius and Ansellia, while Dendrobiums and Cypripediums are cultivated with much success. The warm climate of Bahia is eminently suitable for Aërides, and some fine and very interesting species of this genus are cultivated. This valuable collection, so especially rich in fine varieties of Cattleya labiata, affords considerable pleasure to Coronel Amorim, and we hope on a future occasion to publish additional notes on some of his remarkable Orchids.

THE AMATEUR'S PAGE.

WHEN, some years ago, it was the fashion to cultivate ferns, one of the attractive features of the hobby existed in the small amount of attention they required. They are shade-loving plants, and so far as the daily work was concerned, all that had to be done was the protection from bright sunshine and the supplying of ample moisture to the soil and foliage. All this was easily accomplished by the owner, who left home early in the day on business matters and returned in the cool of the evening. The writer has recently been reminded of this by an elderly amateur, who suggests that if Orchids could be cultivated under similarly easy conditions he would certainly take a greater interest in them.

Without going into the question of how far suceess could be obtained with some of the most popular kinds, which may be said to include Cattleyas and certain others that require regulated periods of restricted sunshine, there are numerous Orchids that rarely fail to interest very considerably the owner and also the visitors. The latter are usually inexperienced in the cultural work of these plants, but they, nevertheless, by their appreciative remarks, give considerable encouragement. It is hardly necessary to refer to the amateur living in the open country, for pure air and abundance of light enable him to reap a far greater degree of success than can be attained by the less fortunate man whose small garden in or near a large town contains but one small greenhouse, and that frequently a structure planned by an architect who thought more of its general appearance than its power of producing healthy plants. However, where these houses exist, the best can always be made of them by a little careful consideration in the selection of the plants.

The writer well remembers visiting a suburb of London and really enjoying several hours amongst the plants. They were all cultivated in a house which for the greater part of the year received very little sunshine. The owner was not ambitious as to acquiring highly coloured Cattleyas. He studied a number of interesting species until he became quite an authority on what he delighted to call his own little section of Orchidology. The smaller the plant in its habit of growth so much the more did it appeal to him, for, in his own words, he got greater variety of structure and flowers in a very small space. Many of these plants were cultivated in shallow pans suspended over the pathway, and it was a frequent pleasure for him, on his return home in the evening, to take down a few of them in order to discover whether they had produced some of their microscopic and highly interesting flowers during his absence.

Many of these plants were Masdevallias. They appeared to suit the prevailing conditions admirably, and being without pseudobulbs all that was necessary regarding the application of water consisted of a few cans daily during the summer and less frequently during the winter. These plants require no definite season of resting or so-called drying-off, and their simplicity in this respect made cultivation so much easier. Potting was a simple process, for the small pots and shallow pans required but a comparative trifling amount of compost. Of the many dozens that were cultivated, the winter-flowering M. tovarensis with its pure white flowers proved very pleasing, as also did the richly coloured and varying forms of M. coccinea and M. ignea. One little species, known as M. muscosa, was a perfect wonder in the eyes of this amateur, as indeed it is to-day with many others. When any small insect enters the flower the lip springs up, closing firmly over the column, and imprisons the insect for about a quarter of an hour. Nearly all the species in this genus are suitable for cool house treatment, and of the few that require a slightly higher temperature it is possible that a place near the boiler end of the house may be found warm enough for them.

Cœlogyne cristata is easily cultivated in a cool house during the summer months, but in winter time it appears to succeed best when placed in a somewhat drier place, such as the intermediate house, or the cool end of the Cattleya house. In other words, it seems to require about the same temperature all the year through. If the bulbs and foliage are over supplied with moisture during the late autumn and winter months there is a likelihood of the flower-buds rotting. This is one of the plants which appears to succeed best, so far as flowering is concerned, when a large number of bulbs are crowded in a pan or pot. Specimens resembling a heaped measure of green plums seldom fail to yield a quantity of bloom in due season.

THE BANKHOLME COLLECTION, PURLEY, SURREY.

IF we look through the history of most of the collections that in their day have been famous, it will be found that many have originated from a few plants of comparatively small value, but nevertheless possessed of attractive characters that are absent in other occupants of an amateur's greenhouse. The more Orchids are examined so much the more does one fall in love with them, and small beginnings frequently lead to important collections being made. A collection that has made much advance during recent years is that being formed by F. J. Hanchet, Esq., of Bankholme, Woodcote Valley Road, Purley. In 1905 the occupants of the greenhouse included but one Orchid, and that a plant of Cypripedium insigne. But the charms of this good old species subsequently lead to other interesting Orchids being acquired, and in 1919 an additional structure in the way of another span-roofed house was erected for the cool growing kinds.

On each side of the houses there is ample piping for maintaining the desired temperatures. The staging is of painted laths, under which are sheets of corrugated iron covered with broken coke to assist in producing the necessary moist atmosphere. One of the pleasing points about this collection is the keen practical interest taken in it by the owner, as well as by his son, Mr. H. Hanchet. It has been said that to grow Orchids successfully one must really love the plants, and it is with much truth that this applies to the present collection. The considerable care and attention which these two amateurs give is seen in the vigorous nature of all the plants. When, as frequently happens, Mr. Hanchet and his son are away from home, the necessary attention in regard to shading the houses and in adjusting the ventilators, as well as in damping down, is ably carried out by their gardener, Mr. D. Bignell. The south-west side of the roof is shaded by lath roller blinds, and to these tiffany is attached in the summer time, so that both can be rolled up together.

How and when to ventilate is always an important part of the cultural work. If the top ventilators of the cool house are opened too widely much of the atmospheric moisture will escape, and if they are but little used the plants become too soft and sappy. Mr. Hanchet's method in regard to the cool house is to keep the top ventilators closed during the day time in order to preserve the moist atmosphere. He finds this of even greater importance than keeping the temperature as low as possible by an injudicious amount of fresh air, which in the houses of some amateurs amounts to a continuous draught. As soon as the heat of the day is past the top ventilators are opened and allowed to remain so until the next day, the cool night air having a beneficial effect, especially on Odontoglossums and plants of similar constitution, and entirely overcoming any detrimental effect brought

about by too high a temperature in the day time. The bottom ventilators remain open day and night.

This treatment has yielded some excellent results in the case of Vanda cœrulea, always a difficult subject to maintain in a healthy condition for any prolonged period. Of the four fine specimens, one has seventeen pairs of healthy leaves, and when last flowering produced two spikes each with fifteen blooms. The other three plants are but slightly smaller. Close to these specimens is a tall plant of Aërides Vandarum, with its singular cylindrical foliage.

The Lycastes include cruenta, aromatica, Deppei, selected varieties of Skinneri, and the rare xytriophora from Ecuador. At the end of the house space is found for a select assortment of Cymbidiums, which include Ceres, a fine variety of Warbler, Hanburyanum, as well as richly coloured forms of President Wilson and Alexanderi. Anguloa Clowesi, with its cradle-like blooms, the sweetly-scented Maxillaria picta and the pretty Promenæa citrina are also to be seen. Mention may also be made of Epidendrum Boundii, with its heads of orange-red flowers, and of E. gattonense (Boundii × xanthinum).

Cypripediums are the special favourites of Mr. F. J. Hanchet. Many of the specimens have been grown on from very small pieces, a number of which are to be seen in a propagating case placed in the hot-house. Among the noteworthy varieties are Shogun, F.C.C., R.H.S., with eleven growths, Germaine Opoix, Miss Louisa Fowler, Thalia var. Mrs. F. Wellesley and Alfred Dimmock. Two special favourites are Cypripedium Bankholme and C. woodcotense (Alabaster × Leeanum). C. Maudiæ and C. Venus grow with considerable vigour, and fine flowers are produced from numerous other hybrids in the genus during the winter months. Mr. Hanchet obtains excellent results in the culture of Cypripedium bellatulum by using pieces of old red brick mixed with loam fibre. A recently imported piece of C. Godefroyæ is being similarly treated. Space only permits of one other Cypripedium being mentioned, and that is King George V., which received a First-class Certificate, R.H.S., in 1910.

Odontoglossum Doreen was purchased at the Chelsea Show last year, and it has handsome flowers heavily blotched with bluish-purple. A nice selection of these charming spring flowering hybrids is to be seen, as well as Odontiodas. Among the latter is a plant of Oda. Graireanum, which is making two growths from the same side of the last bulb, and two growths from the back bulbs. Oda. heatonensis yielded no less than eight spikes of bloom last spring. A recent addition to this house is the rare Trias picta.

In the hot-house may be seen two fine specimens of Vanda tricolor. They are grown in large pots filled with pieces of old red brick and sphagnum moss. Close to them is the rare Vanda Sanderiana, which appears to be

making satisfactory progress. Included with the Lælias is a fine variety of tenebrosa and the beautiful L. purpurata Russelliana, which has just produced a spike of three flowers. The Cattleyas include several elegant forms, and some seedlings from the late Mr. J. Gurney Fowler's collection, also five plants of a C. Trianæ from the late Mr. Chamberlain's celebrated collection. Albino varieties are represented by several healthy plants, and a very pretty variety of C. Schröderæ is of interest on account of coming from the collection of the late Sir Trevor Lawrence. Some of the more recently raised hybrids are included on the side staging, and attractive flowers are produced by Adula, Fabia alba and several Læliocattleyas. Phaius hybridus is quite at home in the atmosphere of this house.

As may be expected with anyone who cultivates Dendrobiums there are fine varieties to be seen of Apollo and Ainsworthii, also Cybele album, of which there are four fine plants. D. Gibsonii, from Tenasserim, D. primulinum, and D. Phalænopsis are three species worthy of careful cultivation, and it must be said that they succeed uncommonly well in the Bankholme collection. In completing these notes of a very promising and interesting collection we may mention several elegant Brassavola hybrids, a grand plant of Cypripedium Rothschildianum from New Guinea, the attractive Oncidium McBeanianum, and a healthy specimen of Aërides odoratum. When making the compost for repotting the Cypripediums only the actual fibre from the loam is used, all the fine matter being shaken out previously. Mr. Hanchet finds this an excellent plan, for if at any time the plant is overwatered, there is but little danger of it remaining in a sodden condition for any prolonged period.

ODONTOGLOSSUM HASTILABIUM.—This was one of the discoveries of M. Linden, who found it on the Eastern Cordillera of Colombia in 1843. It appears to have first flowered in England at Syon House in August, 1846. The specific name refers to the halberd-shaped form of the labellum.

LÆLIOCATTLEYA WAVRINII.

THE first flowering of this plant in 1907 created a great deal of interest, for nothing like it had been previously seen. The plant, which appears to have been imported about the year 1904, was sold by M. E. Praet, of Mont St. Amand, near Ghent, to the Marquis de Wavrin, Château de Ronsele, Ghent, from whom the reproduced photograph was received. An examination of the pollen masses showed that the plant was a Læliocattleya, there being four large and four small masses. The Cattleya parent was no doubt C. Walkeriana, evidence of this being seen in the dwarf habit, the rather short broad leaves, and the small but characteristic

yellow blotch on the disc of the lip. The other parent was at first mentioned as L. Boothiana, but the fact that this species was not known to inhabit the same district as C. Walkeriana created further investigation.

LÆLIOCATTLEYA WAVRINII.

Subsequently, L. crispa was considered a more likely second parent. M. Forget, who had done much collecting for Messrs. Sanders and obtained considerable experience regarding Brazilian Cattleyas, remarked that he had no doubt as to L. crispa being concerned in the parentage.

DISA JULIA A. STUCKEY.

MESSRS. Flory & Black showed an interesting series of their hybrid Disas at the R.H.S. Meeting held on July 11th, their latest and best production being given the above name in compliment to Miss Julia A. Stuckey, Unley Park, S. Australia. An instructive article on exporting Orchids from England to Australia appeared in our June number, written by this lady, and readers will appreciate the enthusiasm of this far-away amateur, who, despite a climate that may vary 40 degrees in 24 hours and may climb to 104° Fahr. in the shade, has remained for many years constant to her devotion to Orchids, and has made many attempts to establish what we call "cool" Orchids, including Disas, under such forbidding temperature conditions as she describes.

The Disas shown were Luna, Blackii, Italia and the above. Luna is a hybrid between racemosa and Veitchii, the latter a cross between grandiflora and racemosa, thus the primary hybrid from which all the others have sprung. Veitchii was flowered by Messrs. Jas. Veitch & Sons in 1891 and Luna in 1902. Luna proved to be a free-growing plant having, when strong, upwards of a dozen flowers of a rose-purple tint, and Messrs. Flory & Black conceived the idea of recrossing this with grandiflora so as to obtain a vigorous plant with flowers approaching the colour and substance of that fine species, yet with the floriferousness of Luna. The result of this cross was Blackii, a flower of enhanced size and deepened colour, but not yet the colour sought for. Much of the constitution of Luna is retained in this plant, and the number of flowers borne on each spike much the same. Still in pursuit of the fine qualities of grandiflora, Blackii was in turn crossed with that species, the result being Italia, a flower with more of the fine substance of grandiflora and pink shades of colour, and still retaining much of the vegetative habit of the earlier Luna, but with the purplish markings on the leaf and flower-stalk indicative of grandiflora. The previous hybrids had remained perfectly green, with an odd exception in Blackii. So far, there has been a steady advance towards a scarlet Disa hybrid. D. Italia was crossed with grandiflora in 1918, and the result of this is Disa Julia A. Stuckey. This is a strikingly beautiful flower. The lower sepals are a brilliant carmine-red, the upper sepal clear pink veined with crimson; the arch of the petals is sulphur-yellow and their lower halves carmine.

It will be observed that there are only two species in all these hybrids: racemosa with the many rose-purple small flowers of delicate texture, and grandiflora with the few scarlet large flowers of thick texture. The object of obtaining a "grandiflora" with the free flowering qualities of racemosa or Luna can hardly be determined yet, as this hybrid is flowering for the

first time, but partial achievement in this respect will be something if it prove of finer constitution than grandiflora, and this is not to be doubted. And we must not forget that in getting here a series of very fine hybrids has been added to this quaint and beautiful family.

DISA CULTURAL NOTES.

THE culture of these plants is very simple, though there is no denying that many have failed with them. The Disa requires as much care but no more than most popular Orchids that are well grown, and it may be worth while noting in passing that not infrequently it is the general gardening practitioner and not the specially trained Orchid grower who cultivates them most successfully. Backhouse, of York, grew them notably well at one time, and in later years Cripps, of Tunbridge Wells. They have been grown to perfection up and down the country, and they are at present being excellently grown at Borde Hill, Sussex, and other places; so we must rule out locality as being the only thing that counts. Success is not "just finding a place to suit them" in the way of locality, and failure is not just "because they simply won't grow here."

The Disa is at once tuberous and fibrous rooting. A healthy plant, even before it has finished flowering, will be sending up young shoots which, if strong enough, will be the flowering growths of next year. These shoots are not the young growths from existing tubers, but are directly from the roots, and the forerunners of tubers. The roots of a healthy plant develop leaf-buds well down in the pot, and the healthy advancement of these shoots will form tubers lusty enough to throw flower spikes in due season.

The Disa is one of the few Orchids that like light rather than sun, and a cool crisp but moist air. Coddling or forcing of any kind is anathema to them, and a light, cool, airy position with a north aspect is to be recommended. They have been grown well in a cool greenhouse with plants like Myrtle, Oleander and Azaleas. Whatever may happen to D. grandiflora in its natural habitat, neither it nor its hybrids should ever be allowed to become dry here. The young shoots already mentioned would dry off. But the more slowly and sturdily these are brought along the more assurance there is for the future of the plant. A good plan is to have the pots plunged three parts their depth in well squeezed-out sphagnum moss, so that the pots may be kept cool and evaporation checked, thus avoiding too frequent watering. They require just to be moist all the winter and in a uniformly low temperature, say 40 to 50 degrees or even less. These young shoots should come along ever so slowly during the short days, and ever so sturdily.

Disas may be repotted in September or in February. Equally successful

growers pot at both times. A famous Orchid grower was wont to say that the more things you had in your compost, providing they were all good things, the more likely your plants were to grow well, and this about hits off a compost for Disas. To the other good things a little fibrous loam should not be forgotten, and a third should be sphagnum moss. Drainage must be ample and the compost porous and moderately firm. As thrips are unusually fond of Disas, the plants should be sprayed at intervals with an insecticide. They must not be fumigated or the leaves will be injured.

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR.
Brassocattlælia Ancona	Lc. luminosa × Bl. Jessopsii	Stuart Low.
Brassocattlælia Monitor	L. purpurata × Bc. Marg. Fournier ...	Stuart Low.
Cattleya Corydon	C. armainvillierensis × C. Trianæ ...	J. J. Bolton, Esq.
Cattleya Everest	C. Mossiæ Wageneri × C. Magali Sander	Hassall.
Cattleya Namur	C. Mossiæ × C. Robt. de Wavrin ...	Stuart Low.
Cymbidium Emery	C. Alexanderi × C. I'Ansonii	Sir J. Colman.
Cymbidium Fanny	C Woodhamsianum × C. I'Ansonii ...	Sir J. Colman.
Cymbidium Lotta	C. I'Ansonii × C. Lowianum	Sir J. Colman.
Disa Julia A. Stuckey	D. Italia × D. grandiflora	Flory & Black.
Læliocattleya Avon	Lc. Geo. Woodhams × C. Mendelii ...	Stuart Low.
Læliocattleya Joyce Tomlinson ...	Lc. Fascinator × C. Zephyr	Mansell & Hatcher.
Læliocattleya Melita	Lc. Cupid × C. Mossiæ	Pantia Ralli, Esq.
Odontioda Admiral	Oda. Brewii × Odm. Mars	Stuart Low.
Odontioda brilliantissima	Oda. Sanderæ × Odm. majesticum ...	Stuart Low.
Odontioda Virgil	Odm. Rolfeæ × Oda. St. Fuscien	Sanders.
Odontoglossum citrinum	O. eximium xanthotes × O. Boadicea aureum	P. Smith, Esq.
Odontonia Majestic	Ota. Lairesseæ × O. crispo-Harryanum ...	Sanders.

HAYWARDS HEATH FLOWER SHOW.—A very successful exhibition was held at Haywards Heath, Sussex, July 19th and 20th, when Messrs. Charlesworth & Co. staged a splendid group of Orchids on a large central table. A remarkably fine selection of species and hybrids was included, and the whole exhibit proved a constant attraction to the many visitors. The excellent examples of Odontoglossums and Odontiodas came in for much praise. On a side stage this firm exhibited a large group entirely composed of Miltonia vexillaria and the numerous hybrids that have been produced from it. The range from almost pure white to the dark rose-coloured varieties with crimson masks was very effective. One of the most interesting items was the table decoration class, and the valuable practical advice given to the competitors by Mr. R. F. Felton after he had completed his judicial duties. Subsequently Mr. Felton demonstrated in a skilful manner the great decorative nature which Orchids possess, the making of a beautiful bridal bouquet of Orchids being watched with keen interest. The President's Challenge Cup was awarded to Messrs. Charlesworth & Co.

AN AMATEUR'S EXPERIENCE.

BY JOSEPHINE R. WALKER.

HOW seldom one sees really good plants of the Oncidium genus. I suppose it is because of their free-flowering habit, which, if not checked, causes them in a few years of cultivation to bloom themselves to death. I remember some years ago we got hold of a few fine imported plants of the beautiful varicosum Rogersii. They were put in small pans and hung up in the warm end of a house in which we grew Cattleyas. For two or three years they bloomed splendidly, giving glorious spikes with anything up to 150 blooms on a spike. We thought we were doing them well, but failed to see that each year the blooms were gradually getting smaller and beautifully less, and that they were not rooting sufficiently well to justify the spikes. All this we found out when too late! The splendid native bulbs had given up all their strength, and that was the end.

We resolved to have another try some day with Oncidiums, but have not seen any until last month when we got a note of an importation of these lovely varieties—crispum, curtum, Forbesii and Marshallianum. We consider these four to be the very best of the genus. If the plants we have are any criterion they are a grand lot and have travelled well. We were uncertain how to deal with them; there were five to six bulbs on each piece, one above the other, which meant that if we put them in a pot small enough to induce root action quickly they would be well out of the top. Linden, in his admirable book, says whenever he found them they were always on the trees with their roots sprawling along and clinging to the rough bark, seeking niches and crannies where the fallen leaves had lodged, but very few traces of moss did he see. In the evenings they were always saturated with the heavy dews and they really never saw the sunshine. Williams, in his Manual, says they are best grown in pots or baskets with a compost of peat and moss, and good drainage. Sanders, in the Orchid Guide, say they do best in fibrous peat and sphagnum moss, or leaf mould, but all agree that they require plenty of moisture and should never really be allowed to get dry, though the water should be sparingly given when they have completed their growth.

After an inspection of our little lot we decided they had certainly grown on trees, and we decided to follow nature as far as possible. We always keep under the staging a number of pieces of rough bark, on some of which we cultivate the fine lichen mosses, so we sorted out those of a suitable size and laid the plants on them, carefully spreading out the roots, and putting on them a layer of soft fibre with a liberal mixing of chopped oak leaves, securing it carefully with fine wire. They were then dressed off and tufts of living sphagnum moss were plugged in all round the bulbs. That was three weeks ago and I am pleased to say they are now rooting splendidly.

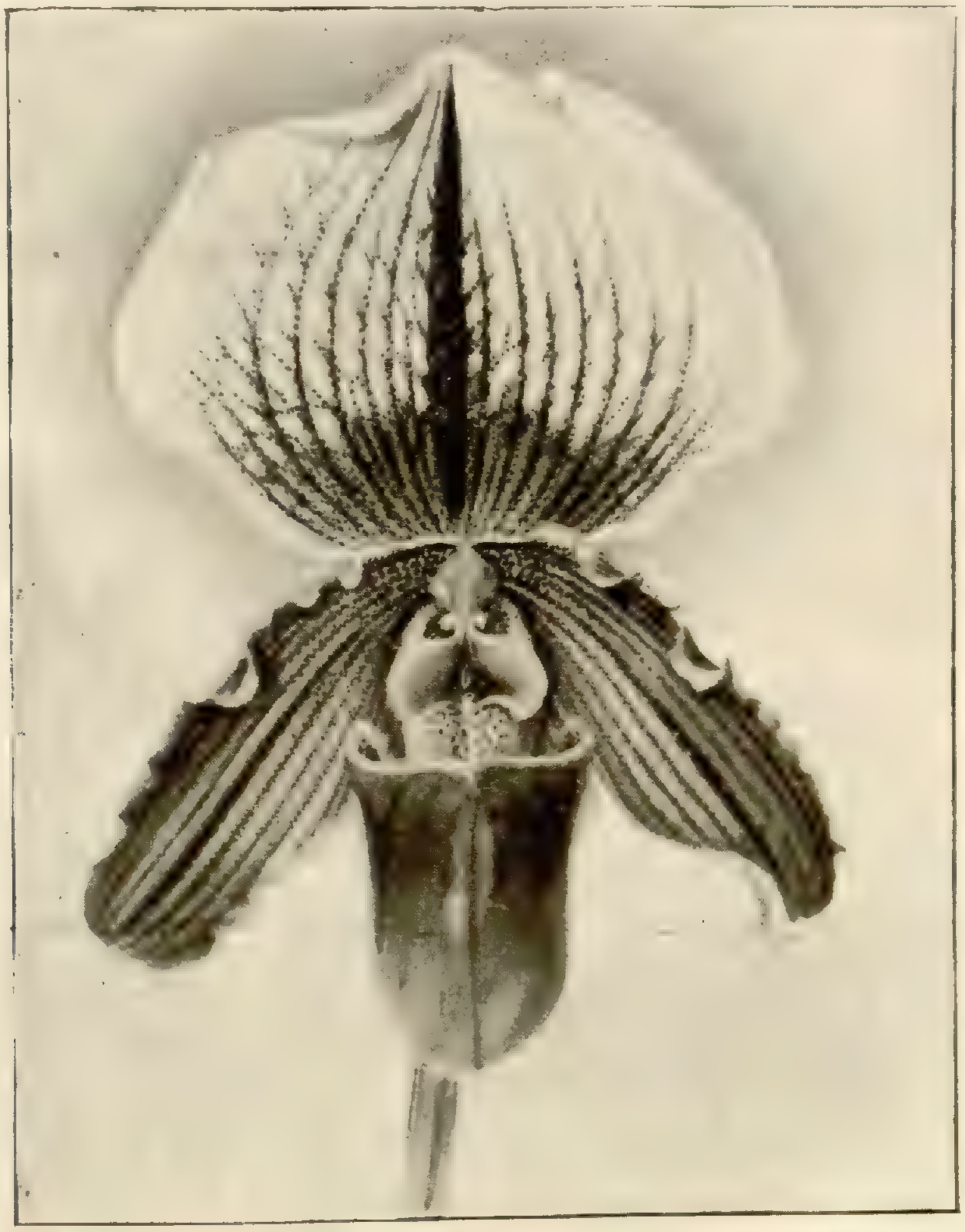
Some of the old roots are throwing out new fleshy roots, which can be seen creeping along the bark, so we are in hopes that this treatment is going to give good results. Nearly everything we have put on such barks flourishes well. We have decided to steel our hearts and take out the first bloom spikes that appear in order that the plants may have a real good chance to get thoroughly established. We have put them on a shelf at the end of the house under the tree where the rays of the sun do not get on to them and where there are no hot-water pipes near. We lightly syringe them two or three times a day, and always the last thing at night. There always seems to be a current of air round them. We hope they will be happy. One day this week during the torrential rain, the spout above them became blocked, with the result that they were deluged with water. But they appear to have enjoyed it thoroughly. Perhaps they thought themselves back in Brazil !

We have had a busy time lately. On many of the seedling Lælio-cattleyas recently acquired, a sort of rust was noticed on the leaves. We assumed this was caused by thrips, so we carefully washed and cleaned all the plants and then painted them with insecticide. We were congratulating ourselves that the pests had been all snuffed out. Alas, during the last few days, as the new leaves opened, there were many traces of the same thing, so it appears that in spite of all our care we have imported something that is going to cause us trouble. We have fumigated the whole place well, but even now, as one handles the individual plants and examines them under a glass, the minute yellow insects can be seen crawling about. If another fumigation does not shift them we shall try a spraying of soft soap aud quassia chips solution. It is extraordinary how in a collection that appears to be in perfect condition traces of disease of various sorts can be found on handling each plant individually. I think this is particularly so with the older plants of Læliocattleyas and the Cattleya genus that have had scale on them at some time. One's attention is first attracted by a few insects on a bulb, and then on removing the sheath-like skin a beautiful collection is found, yet looking casually at the plant one would say it was in perfect health. It only goes to show that it is a mistake to acquire more plants than can be attended to.

My great ambition is to grow Odontoglossums and Odontiodas. The more I see them the more I want them. We think they hold the greatest possibilities of the future, but, alas, I feel they want a house to themselves. We are trying a few down at the cool end along with the Oncidiums, but not on the shelf, and we have erected a shade blind to draw across in order to keep the early morning sun off them, so perhaps they will reward us with some spikes of their wonderful flowers.

CYPRIPEDIUM NIOBE.

OF all the many Cypripedium hybrids, and their number is indeed great, but few have been better appreciated than the cross between Spicerianum and the once rare Fairrieanum. C. Niobe was originally raised and named by Messrs. Veitch. The first mentioned parent carried the pod, the seed was sown in 1884, and the earliest flower opened in 1889. It is an interesting fact that this hybrid forms the subject of the first illustration in the first volume of the *Orchid Review*. C. Niobe was also raised in the collection of Mr. H. Gaskell, of Liverpool, where it flowered in 1890. The

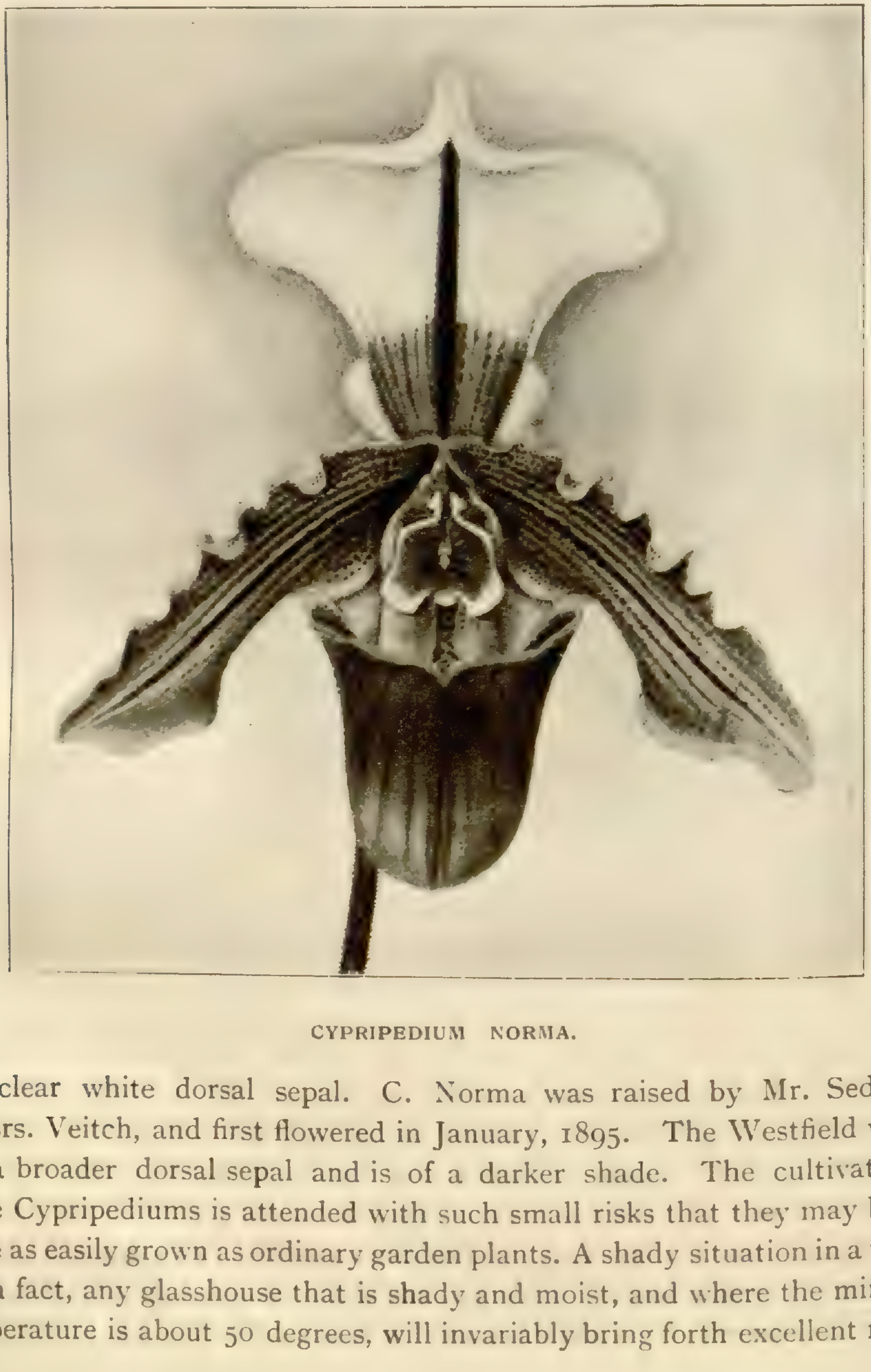


CYPRIPEDIUM NIOBE.

fine variety here figured was raised in the collection of the late Mr. Norman C. Cookson. Several distinct forms have appeared at different times, the most richly coloured probably being the Westonbirt variety. With such attractive features as this easily-grown hybrid possesses, it is no surprise to find that it has been very much used by the hybridists, and, generally speaking, with excellent results. Cypripediums are especially suitable for gardens in or near large towns, where there is generally a heavy atmosphere during the autumn months.

CYPRIPEDIUM NORMA.

THE first of the Niobe hybrids was Cypripedium Norma, obtained by crossing Spicerianum with Niobe (Spicerianum × Fairrieanum). Thus it contains only the same two species, and in consequence exhibits no additional specific characters. But, as expected, the flower shows a much stronger resemblance to the Spicerianum parent, and in the accompanying illustration the dominating influence of this species is principally seen in



CYPRIPEDIUM NORMA.

the clear white dorsal sepal. C. Norma was raised by Mr. Seden for Messrs. Veitch, and first flowered in January, 1895. The Westfield variety has a broader dorsal sepal and is of a darker shade. The cultivation of these Cypripediums is attended with such small risks that they may be said to be as easily grown as ordinary garden plants. A shady situation in a vinery, or, in fact, any glasshouse that is shady and moist, and where the minimum temperature is about 50 degrees, will invariably bring forth excellent results.

CULTURAL NOTES.

BY J. MACKAY, ORCHID GROWER TO JAMES J. JOICEY, ESQ., THE HILL, WITLEY, SURREY.

A GOOD many plants will by this time have completed their growth, and a great many more are rapidly approaching this stage. When growth is finished at this time, it is advisable to remove such plants as Cattleyas, wherever possible, to more suitable quarters, rather than leave them in a house in which others are growing actively. Where a house is at liberty for this purpose, these plants can have their special requirements better attended to. Here they may gradually receive more light and air. Such plants as C. Warscewiczii, C. Gaskelliana, C. Warneri, and their various hybrids, have not only completed their growth, but have mostly flowered; water at the roots will yet be necessary, and should not be discontinued for some time to come. It is reasonable that the plants mentioned should demand conditions differing somewhat from others that are in the middle of their growing season. More air may be given them and less shading used. Do not withhold water too suddenly at the roots, but allow them to lapse into a dormant state gradually, otherwise the ripening process will be too severe, causing an undue check to the plants, with, possibly, disastrous results afterwards.

This month a good many Dendrobiums will be nearing the end of their growing season, and these may gradually be exposed to more air and sunlight. These plants, being in full leaf and also well rooted, will, with this treatment, require water more frequently at the roots. Their growing conditions will have to be kept up for some time yet, and top ventilation taken off sufficiently early in the afternoon to maintain a warm moist atmosphere. At this time light spraying overhead will be beneficial, as well as a check to attacks of red spider on the foliage. This treatment may be given to most of the warmer growing kinds, such as D. Phalænopsis, D. formosum, D. Dalhousieanum, D. fimbriatum, D. thyrsiflorum, D. Findlayanum, D. nobile, D. aureum, D. Wardianum, and the various hybrids from the latter species.

Miltonia vexillaria, and the various hybrids, the majority of which have finished their flowering season, are already on the move with fresh growth. This month is a most suitable time for repotting them, and in order to keep them in good health and vigour it is necessary that they should have fresh material given them at least every two years. Some may require larger pots, others may need to be broken up and given smaller receptacles, in any case, a good potting compost should be used, such as osmunda, polypodium fibres and sphagnum moss in equal parts. They are not deep rooting plants, therefore plenty of drainage is necessary. Avoid overpotting them into large pots or pans. Finish the potting by surfacing with chopped sphagnum

moss to which has been added a little A1 fibre. An intermediate house temperature will suit their requirements, and water must be given them carefully for some time, also keep them shaded from direct sunshine. Keep the surroundings moist by syringing between the pots, and on fine hot days they will benefit by frequent light sprayings overhead.

ODONTONIAS.—These hybrids are now more numerous, and some very beautiful varieties have recently been flowered. They are not so vigorous as their parents suggest, yet it is possible, by further intercrossing, that greater vigour will be produced, and that this race of hybrids will grow and flower equally as well as the Odontoglossums and Miltonias. A slightly warmer temperature than that given to Miltonias seems to suit their requirements best, and when repotting is needed a similar compost to that for Miltonias will suit them well. Grow them in small pans or pots, and give them treatment on the same lines as accorded to Miltonias generally. Thrip is the most troublesome pest for these plants, and the usual remedies must be applied by dipping them in some safe insecticide about once a fortnight.

Odontoglossum crispum and its various hybrids, together with Odontiodas, have greatly benefited by the cooler conditions which have prevailed lately. By the end of the month a good many will be in a condition to be repotted. Where any quantity are grown it is well to make an early start with this operation, and plants that have the new growth well advanced may have attention right away. A suitable compost is made up of osmunda and A1 fibre, sphagnum moss and oak leaves, in equal quantities. Plants repotted at this season will quickly re-establish their vigour. Confine them to suitable receptacles, and above all do not overpot them. Remove any pseudo-bulbs that are not required, and these, if a good eye is present, may be persuaded to break by placing them on sphagnum moss in a propagating frame. Odontiodas, unless a house is set apart for them, should be grown at the warmest end of the Odontoglossum house, where they will greatly benefit by the extra warmth during the autumn and winter months.

CALANTHES.—These winter-flowering plants are now fast developing growth and rooting freely. They must be encouraged by liberal watering and plenty of heat. During warm days give them occasional sprayings overhead, and they will benefit by a little weak manure water applied once a week. Some growers prefer to top-dress at this time with fibrous loam intermixed with dried cow manure, and the practice is to be commended if large flowering bulbs are to be obtained.

Disa grandiflora and the various hybrids have now practically finished their flowering season. They should be given a rest in a cool, shaded frame for about six weeks. Keep the plants and surroundings moist during this time. With this treatment they will develop sturdy young growth

from the tubers, and when this is about two inches long they may be repotted. A suitable compost consists of sandy peat broken into small pieces, sphagnum moss and limestone. They grow well in shallow pans, and several tubers may be placed in them according to size. The off-shoots which are removed from the larger tubers may be grown on in small pans: these in time will make tubers of flowering size. Unless pots or pans are overcrowded with young growth, Disas need only be repotted every second year. With cool, moist, shady treatment these plants can be kept clean from insect pests such as thrip, which are very partial to the succulent young growths. When so attacked, do not fumigate, as Disas resent this treatment, but dip them in some safe insecticide at frequent intervals.

NANODES MEDUSÆ.—This intermediate house Orchid is most interesting, if not very pretty. The plant itself is attractive, apart from the flowers, which are of rather an unusual colour, but with a large fringed lip. The stems are drooping and thickly clothed with short distichous light green leaves. In consequence of this drooping habit it should be grown suspended in small pans or baskets. Now is a good time to repot or top-dress with sphagnum moss and polypodium fibre, intermixed with coarse sand or finely-broken crocks. When growing well these plants enjoy good supplies of moisture at the roots.

The cooler weather has enabled the grower to go thoroughly through his plants with ease and comfort, and give them the necessary cleaning and staking which is required at this season. The growths of Cattleyas and Dendrobiums need some such support and should be temporally secured to neat sticks; when growth is finished and ripened they may finally be tied to give the plants a neat appearance.

ROYAL HORTICULTURAL SOCIETY.

June 27th, 1922.

MEMBERS of the Orchid Committee present:—Sir Jeremiah Colman, Bart. (in the chair), Prince Tadashige Shimadzu, Messrs. J. O'Brien (hon. sec.), F. J. Hanbury, H. T. Pitt, Stuart Low, J. Wilson Potter, Pantia Ralli, E. R. Ashton, A. Dye, Gurney Wilson, F. K. Sander, S. W. Flory and H. J. Kaye.

CULTURAL COMMENDATION.

To Messrs. Charlesworth & Co. for a fine specimen plant of Cœlogyne burfordiensis (pandurata × asperata) with seven arching spikes and numerous greenish-yellow flowers, the lip having some blackish markings. It was originally raised by Mr. W. H. White in the Burford collection, and received an Award of Merit, R.H.S. May 23rd, 1911, when exhibited by Sir Trevor Lawrence, Bart.

GROUPS

Messrs. Stuart Low & Co. were awarded a Silver-gilt Flora Medal for an extensive exhibit containing some finely grown plants of Cattleya Warscewiczii, mostly with five flowers on the spike, and Læliocattleya Canhamiana, of which some distinct varieties were in excellent condition. Among the Dendrobiums were D. Parishii, well-covered with bloom, T. Thwaitesiæ, and D. Victoria Regina, with its slaty-blue flowers. D. thyrsiflorum carried eight handsome pendulous spikes of bloom, and there was a good example of Cattleya Mendelii Sunray and the interesting Maxillaria tenuifolia.

Messrs. Sanders obtained a Silver Flora Medal for a fine exhibit in which Cattleya Kienastiana Sanderæ and C. Mossiæ Wageneri occupied central positions. Strong plants of Aërides virens and Acropera Loddigesii carried excellent spikes of bloom, as also did the handsome Dendrobium densiflorum. Lælia Gouldiana was shown in fine form, although out of season, and Cypripedium Curtisii Sanderæ looked well among some botanical species, of which mention may be made of Epidendrum Parkinsonianum, E. organense, and Masdevallia muscosa.

Messrs. Charlesworth & Co. staged a fine example of Læliocattleya General Maude, a many-flowered plant of Miltonia Charlesworthii, and the richly coloured Slc. Prince Hirohito, with the lip of intense crimson.

July 11*th*, 1922.

Members of the Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), Prince Tadashige Shimadzu, Messrs. Jas. O'Brien (hon. sec.), Pantia Ralli, A. McBean, W. J. Kaye, F. K. Sander, H. T. Pitt, Gurney Wilson, F. J. Hanbury, J. E. Shill, E. R. Ashton, and C. J. Lucas.

H. T. Pitt, Esq., Stamford Hill (gr. Mr. Thurgood) was awarded a Silver Flora Medal for an attractive group containing three specimen plants of Platyclinis filiformis, the elegant Anguloa brevilabris, fine examples of Vanda teres, Catasetum fimbriatum, and a grand specimen of Bulbophyllum macrobulbum bearing no less than 20 fleshy flowers of cream colour densely spotted with chocolate red. A Cultural Commendation was given to Mr. Thurgood for his skill in cultivating this plant, and a similar recognition for Platyclinis filiformis with over 30 spikes of golden-yellow blooms.

Messrs. Charlesworth & Co. received a Silver Flora Medal for an exhibit of white Cattleyas, including Myra Peeters, Mossiæ Wagneri, Stuartii virginalis with a blush lip, Muriel with a pink tinge on the labellum, and Hesta, the latter carrying a spike of six white flowers, the lip marbled with bright mauve.

Messrs. Flory & Black staged excellent examples of Disa, including the new Disa Julia A. Stuckey (Italia × grandiflora), with scarlet segments approaching D. grandiflora, but of easier cultivation. D. Blackii and D. Italia were in fine form.

Messrs. J. & A. McBean exhibited Cattleya Falco gloriosa (Dupreana × Dowiana), with a spike of four rich violet-mauve coloured flowers, the crimped lip ruby crimson, and Odontoglossum Doreen var. Rotunda, of fine shape and prettily marked.

MANCHESTER ORCHID SOCIETY.

June 1st, 1922.

MEMBERS of the Committee present :—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, B. J. Beckton, A. Burns, A. Coningsby, D. A. Cowan, J. C. Cowan, A. T. Cussons, J. Cypher, J. Evans, W. Giles, A. Hanmer, J. Howes, J. Jackson, A. Keeling, D. McLeod, E. W. Thompson and H. Arthur (secretary).

A Silver-gilt Medal was awarded to S. Gratrix, Esq., for a fine group of Odontoglossums ; Silver Medals to A. Hanmer, Esq., Capt. W. Horridge, and Messrs. J. Cypher & Sons.

FIRST-CLASS CERTIFICATES.

Slc. Meuse, West Point var., flower of fine shape, sepals and petals deep mauve, lip intense purple ; Odm. crispum Mariette, a fine variety of the Doin type ; Bc. Albion var. Bianca, a well-shaped white flower with the the throat magenta ; and Lc. Teucra gloriosa; a very large flower, with dark sepals and petals and the lip reddish-purple ; from S. Gratrix, Esq.

Dendrobium Butterfly (chessingtonense × Ainsworthii), flowers yellow with blackish blotch on lip ; and Miltonia Horridgeana (Bleuana × Lyoth), sepals white, petals white suffused rose, the lip bearing a blackish-crimson mask ; from Capt. W. Horridge.

Miltonia Hyeana var. The Queen (Bleuana × G. D. Owen), large flowers, almost pure white, and with large blackish mask ; from P. Smith, Esq.

Odontioda Joiceyi splendens (Odm. promerens × Odo. Coronation), the spike carried fourteen large flowers of perfect shape, and marked with regular blotches of intense colour, the outer edge deep pink ; from Messrs. J. & A. McBean. A Gold Medal was also awarded to this plant.

AWARDS OF MERIT.

Odm. eximillus superbum, and Oda. Hiawatha var. Edgemoor ; from A. Hanmer, Esq.

Odm. crispum var. West Point Amazon ; from Mrs. Gratrix.

Od. promerens xanthotes, West Point var. ; from S. Gratrix, Esq.

AWARDS OF APPRECIATION—FIRST-CLASS.

Odm. crispum Angela; from S. Gratrix, Esq.

Odm. eximium var. Daisy Giles; from A. Hanmer, Esq.

CULTURAL CERTIFICATES.

Mr. J. Howes, for Lc. Teucra gloriosa and Bc. Andre Maron.

Messrs. J. & A. McBean, for Oda. Joiceyi splendens.

June 22nd, 1922.

Members of the Committee present:—A. T. Cussons, Esq. (in the chair), Messrs. A. Coningsby, D. A. Cowan, A. G. Ellwood, W. Giles, J. Howes, A. Keeling, D. McLeod, E. W. Thompson and H. Arthur (secretary).

A Silver-gilt Medal wes awarded to S. Gratrix, Esq., for a fine exhibit; and a Large Silver Medal to A. Hanmer, Esq., for a group of Odontoglossums.

Messrs. A. J. Keeling & Sons staged several meritorious Odontoglossums, and Messrs. J. Cowan & Co. exhibited seedling Odontoglossums, Anguloas, and Cœlogyne Dayana.

FIRST-CLASS CERTIFICATES.

Blc. Jupiter var. rotunda, a large flower of fine shape and even colour; Odm. Doreen var. Royal Purple, of red purple colour; and Cypripedium Gowerianum Gratrixianum; from S. Gratrix, Esq.

Odm. eximillus var. The Prince, sepals and petals rich reddish-brown, with white margin; Odm. Penelope var. Edgemoor, a finely formed flower with distinct heliotrope spots; from A. Hanmer, Esq.

Odm. Gorizia giganteum, a very large form; from P. Smith, Esq.

AWARDS OF MERIT.

Cattleya Brenda var. Snowdon, Odm. Cantaur, Cyp. Enchantress, C. niveum var. Emerald, and C. niveum var. Gratrixiæ; from S. Gratrix, Esq.

Odm. Faustina superbum, Odm. Crœsus magnificum, and Odm. Doreen var. Edgemoor; from A. Hanmer, Esq.

AWARDS OF APPRECIATION—FIRST-CLASS.

Odm. St. George vars. Joyce Hanmer and Edgemoor; from A. Hanmer, Esq.

Odm. citrinum (eximium xanthothes × Boadicea aureum), and Vuylstekeara insignis var. Marigold; from P. Smith, Esq.

Odm. Doreen var. Blue Bird; from S. Gratrix, Esq.

CULTURAL CERTIFICATES.

Mr. E. W. Thompson, for Odm. crispum, with two spikes and twenty-four flowers; Odm. crispum Rose, with two spikes and twenty-six flowers; Odm. eximum, with two spikes and forty-four flowers; and Odm. Vulturea, with a spike of forty-two flowers.

Miss M. Rainford, for Odm. Pescatorei album, with a beautiful branched spike of ninety-four flowers.

THE ORCHID REVIEW.

VOL. XXX] SEPTEMBER, 1922. [No. 351

NOTES.

SEED RAISING.—I would be very glad if someone could tell me of any means to get rid of the small midge or moss fly which does so much damage to Orchid seedlings in the very early stages. I believe that many Orchid growers lose a number of the little seedlings before they are large enough to be transplanted from the seed-bed; I certainly do. One does not feel inclined to fumigate at so early a stage. Is there any means of killing the fly without damaging the seedlings?—B. BRACEY, Sawtelle, California.

CLOCK FOR THE LINDLEY LIBRARY.—It is generally admitted that the late Sir Trevor Lawrence inherited much of his love for Orchids from his mother, Mrs. Lawrence, of Ealing Park, who was a keen amateur and frequent exhibitor. Many of the medals which she received from the Horticultural Society were by her instructions melted down and converted into a handsome bronze-figured clock case and stand, and this has recently been presented by her grandson, Mr. Aubrey Lawrence, to the Royal Horticultural Society for use in the Lindley Library.

CIRRHOPETALUM ANDERSONII.—This interesting as well as pretty species was exhibited by Messrs. Sanders at the meeting of the Royal Horticultural Society, August 9th. It is one of the species figured by King & Pantling in Orchids of the Sikkim-Himalaya (t. 124), with the remark:—"Collected only twice—once by the late Dr. T. Anderson, after whom it is named, and once by Mr. Pantling." It was found in the valley of the Teesta, at an altitude of about 1,500 feet. The scape bears from six to twelve flowers of a delicate pink, with minute spots of a darker tint. This species closely resemble gamosepalum, Griff., which produces a scape decurved from its base.

CORYANTHES MACULATA.—This curious and interesting species is a native of British Guiana, where it was found by Mr. Ankers. It flowered for the first time in England in the Botanic Garden of Liverpool in June, 1831. Dr. Lindley remarked of this species that "it is not uncommon in the

woods of Demerara, hanging from the branches of trees and suspending in the air the singular lips of its flowers like fairy baskets for the use of the birds and insects that inhabit the surrounding foliage." The flowers have horn-like appendages at the base of the column which constantly distil water into the bucket-like epichile of the labellum, but the quantity generally diminishes with the age of the flower.

EXPORTING TUBEROUS ROOTED ORCHIDS.—As some of our readers abroad occasionally desire information on packing plants for transit to England, the following extract from the *Kew Bulletin* (1914, p. 97) is of value:—"Tuberous rooted Orchids should be gathered at the end of the growing season, and kept dry for a few days until the foliage has withered. They may then be packed in a wooden box in wood shavings, paper, or any dry and light material. Straw and hay, however, are apt to become mouldy and should not be used for this purpose. The rhizomes, bulbs, or tubers should be packed in the box in such a manner that they cannot move about, as they are very liable to perish if bruised during transit. When the rhizomes are small or thin, they travel best if packed in slightly moistened light material, such as cocoanut fibre, peat soil, sawdust, or wood shavings."

BARLIA LONGIBRACTEATA.—Through the kindness of Mr. W. H. St. Quintin, Scampston Hall, Rillington, York, we have received an excellent photograph of the tubers and root system of Barlia longibracteata. Lindley, who figured the plant in 1819, calls it the Winter Orchid of Sicily, and remarks that Mr. Swainson, of Liverpool, who introduced it to cultivation, observed that in its native home it is the first that flowers among the many little-known species found in Sicily, generally opening its blossoms in the beginning of February, the depth of a Mediterranean winter. In February, 1906, Dr. Gunther brought to Kew a fine inflorescence bearing eighteen expanded flowers, produced by a bulb that had been brought from the Riviera some time previously, and cultivated in the open ground at Bury St. Edmunds, Norfolk. A note, bearing the initials "W.B.H." in the *Kew Bulletin*, 1907, states that "the tubers were brought home from Hyères in 1904 or 1905, and planted in a meadow. Each year some of them have developed vigorous spikes of flowers in February. So far as my experience in Sussex goes, our earliest Orchids, Orchis mascula and O. Morio, do not flower before April. That this Mediterranean Orchid should have preserved the power and habit of flowering so early in the season when transferred to a much colder climate is a biological fact of sufficient interest to be placed on record." This plant is also known as Orchis longibracteata, but its separation from that genus is due to some slight differences in the structure of the pollinia.

LÆLIA LOBATA.

OUR last issue contained an illustration of Læliocattleya Wavrinii, and in the descriptive text thereof mention is made of Lælia Boothiana. The adjoining illustration depicts a five-flowered inflorescence of the plant frequently referred to as L. Boothiana, although its correct botanical name is Lælia lobata. Its history dates back to 1847, when it first flowered in

LÆLIA LOBATA.

Messrs. Loddiges' nursery and was described by Lindley as Cattleya lobata: "The flowers are of one uniform purple, tinged with violet, with some rich crimson veins on the lip. It is nearly allied to C. labiata, of which, perhaps, it is a variety. The excessive lobing of the petals and lip, and the comparative small size of the latter, seem, however, to point to a specific difference. At all events, it is as well marked a form of the genus as C. Mossiæ, and, for the purpose of cultivators, may be looked upon as a distinct species."

A few years afterwards, Reichenbach described and figured this plant under the name Lælia Boothiana, dedicating it to Herr Lorenz Booth, in whose collection near Hamburg it had been in cultivation for many years without flowering. The pollinia are eight in number, proving it to be a

true Lælia. Messrs. Veitch, in their *Orchid Manual*, rightly include it under this genus and describe it as Lælia lobata, thus maintaining the earliest specific name. They add a note to the effect that it is known to occur in only one station, and that on the coast of Rio de Janeiro, where it grows high up on a bare rock that is washed by the ocean below, and where it is fully exposed to the sun from morning till night, a fact of which cultivators should take note, the more especially as the species, although growing vigorously under the usual cultural treatment of Cattleyas and Lælias, often fails to flower. This species is rarely seen in cultivation, and the flowers are still rarer. Mr. B. S. Williams records a fine plant of Lælia lobata superba which carried seven spikes of bloom when exhibited by him at the great International Exhibition of 1866.

DESTRUCTION OF WOODLICE.—An ingenious method of catching woodlice is given by J. Henshall in his treatise on "The Cultivation of Orchidaceous Plants," published in 1845. "Procure some bark from a tree, about six to nine inches in circumference, and nine inches long; previous to the removal divide it in the middle, lengthwise; when taken off place the pieces together, compressing the edges of the one to admit of its passing a little way within the other, that the upper may form a roof to the lower part to prevent any water from getting in the inside of the cavity; between should be placed a slice of cucumber or potato, the former being preferable when procurable. The bark should be tied together at each end, and placed on or amongst the pots, with the roof part uppermost, so that the inside may always be dry; the woodlice will soon find out this hiding place, both for feeding and protection, they may then be destroyed with convenience."

DISA GRAMINIFOLIA.—This elegant South African Orchid has sepals of an intensely bright and beautiful blue, the petals usually purple below, with a bright green upper limb, and the lip pale blue or white, edged with dark blue or purple. It is quite a common species, and has rather a long flowering period. Lindley, in describing this plant under the name Herschelia cœlestis, dedicated it to the great astronomer Herschel, who was also a keen Orchid lover and cultivator. Unfortunately this species is rarely seen under cultivation in England. "It may be expected," remarks Dr. H. Bolus (*Orch. S. Africa*), "that this difficulty will eventually be conquered, and if so the species will soon become deservedly popular amongst Orchid cultivators. Horticulturists will do well to remember that during its flowering period in its native home the plant receives little or no water at its roots, being dependent for moisture on what is stored up in its large tuber, and upon the occasional mists which envelop the mountain sides."

SPIRANTHES ROMANZOFFIANA.

By COLONEL M. J. GODFERY, F.L.S.

THIS species is confined to Ireland (where it is exceedingly rare and local), and occurs nowhere else in Europe. Its headquarters are in North America, where it extends from the Atlantic to the Pacific, and from Unalaska to California. According to Asa Gray, its Irish localities are the last lingering stations of a species once common to both continents. It was first found, sparingly, at Bantry Bay by Drummond about 1810, but in 1886 Dr. Armstrong found the little boggy field where it formerly grew planted with potatoes, and its only other then-known station bearing a crop of oats. Fortunately, it has since been discovered in the North of Ireland.

It was named, as a new species, Neottia gemmipara by Sir J. E. Smith (*Eng. Fl. iv.* 36, 1828). Neottia was a composite genus from which Spiranthes and Goodyera have since been separated. Babington referred it to S. cernua, and Hooker figured it as such (*Bot. Mag. t.*5277), but adopted S. Romanzoffiana in his Students' Flora. Mr. Oakes Ames, the great authority on American Orchids, tells me that S. cernua is a quite distinct species. I sent him photographs of the N. Irish plant, and he said, "If somebody had handed me the photographs, and had said they were taken from specimens gathered in Canada or Maine, I should have told him that the species was S. Romanzoffiana. If then I was informed they came from Ireland, I should have said S. Romanzoffiana, nevertheless." Mr. Ames boiled up a single flower from a sheet of specimens collected by Praeger in Co. Derry in 1895; and another, taken quite at random, of the American plant, and kindly sent camera lucida sketches of the two lips, which clearly show their identity.

Smith's diagnosis was not written by himself. "Such is the account," he says, "given by the accurate Mr. Drummond, and communicated to me in August, 1810, along with a specimen by the Rev. Mr. Hincks, of Cork," pathetically adding, "I have waited from year to year (18 years!) for specimens in a fresh state, but hitherto in vain." Drummond's description runs:—"Buds destined to flower the following year are formed among the leaves at the bottom of the flower stalk . . . . the following spring each bud puts forth a pair of oblong knobs . . . . and becomes a separate plant." This was taken to mean that the plant was gemmiparous, but it is doubtful whether Drummond intended to convey this interpretation, for in that case each plant would have twice as many tubers as the buds of the previous year, or, if each bud separated itself from the parent plant, the plants would be found in tufts. Drummond, however, expressly says there are only two knobs (tubers), and Mr. Ames states that colonies consist of

single plants, not of tufts. Mr. St. Quintin has grown the North Irish plant for seven years, but has seen nothing which might be detached from the parent plant, and start life on its own. His plants, though producing fine flower spikes (fig 2), never set any seed capsules. Thus deprived of sexual reproduction, any latent tendency towards increase by buds would surely have been spurred into action. Mr. Ames, who has specially studied the genus, says that in all the material he has examined, increase takes place by single shoots. A winter-bud is formed which develops in the next growing season to form a flowering scape. Drummond's statement that each bud puts forth a pair of tubers the following spring is an inversion of the facts—the bud does not precede the tuber, but the tuber the bud. In S. Romanzoffiana, as in Orchis, the flowering tuber is moribund, the other is a new tuber which finally develops the bud. As may be seen from figure 1 the new tuber has reached its full development, whilst the hard green bud has only just pushed up; it remains dormant through the winter, and does not break into leaf till the following year.

FIG. 1. TUBERS OF SPIRANTHES ROMANZOFFIANA.
(Reproduced from *The Garden*.)

Mr. W. B. Turrill, who is carrying on the late Mr. Rolfe's work, tells me that the few specimens of the South Irish plant at Kew have one to two tubers, but that several specimens of the North Irish plant have from three to five. S. æstivalis has ordinarily from three to five tubers, but only one flowering stem—apparently merely a case of additional root fibres being tuberised. S. autumnalis has only two, one bearing the flowering stem, the leaves of which have disappeared, the other with a rosette of leaves which persists through the winter, developing a flowering stem the following autumn. Nevertheless, Mr. St. Quintin dug up a plant at Vence on April 22nd last with four strong tubers, but only one rosette of leaves and no other bud visible. This appeared to be due to the persistence of last year's tubers, which had not yet shrivelled up.

The evidence is incontrovertible that S. Romanzoffiana is not

gemmiparous, the name gemmipara being solely founded on a misapprehension of Drummond's ambiguous statement.

Reichenbach's figure of S. gemmipara (*Icones xiii. t. ccccl.xxvii.*) is an uncoloured copy of *E.B.S. 2, t. 2786*, which Mr. Turrill tells me was made from

FIG. 2. SPIRANTHES ROMANZOFFIANA (From *The Garden.*)

a dried specimen, and is very misleading, whilst the analyses are totally inaccurate and worthless. Reichenbach wrote his diagnosis from this figure, and it is not surprising that he doubted whether it belonged to the same genus.

FERTILISATION.—S. Romanzoffiana is entirely dependent on insects for pollination. Mr. St. Quintin, who has grown it for seven years at Scampston Hall, York, in a cool house with open windows, putting the

plants outside on warm nights when many insects were flying about, found that they were left severely alone, though Goodyera repens in the same house was extremely well pollinated. It, therefore, seems probable that the necessary insect was absent. In spite of their fragrance, the flowers proved unattractive to local insects. By inserting a pencil into the flower, the pollinia are easily withdrawn. When the flower first opens, the column lies close to the trough of the lip, and only the tips of the pollinia, which lie on the *upper* surface of the rostellum, and the brown front of the anther are visible. Later, the column moves up from the lip, when the *under* surface of the rostellum with its brown viscid disc can be seen pointing upwards. If at this stage a pencil with pollinia is thrust into the flower, masses of pollen at once adhere to the stigma, the pencil often bringing away a second pair of pollinia. In Orchis, Ophrys, etc., the column is immovable, but the pollinia, vertical when first withdrawn, move downwards till they are horizontal. In Spiranthes the pollinia are horizontal from the beginning, and go through no movement of depression, but the column itself moves upwards from the lip, opening the way for the entrance of the pollinia, and presenting the stigma at the right angle to ensure contact with them.

The genus Spiranthes extends throughout Europe and Asia to Japan, and is represented in N. America by no less than 24 species. Whether it first originated in the Old World or the New, its occurrence in these now widely separated continents shows that it must have existed at a time when it was possible for the plant to extend from the one to the other. Geologically speaking, that period must have been extremely remote. The occurrence of one and the same species, S. Romanzoffiana, both in America and in Ireland, is a striking proof of the antiquity and of the permanence of this species, which has apparently remained unchanged through untold ages. In view of the great range of variation shown by some Orchids, this permanence of form and character is a most arresting fact. One species of the genus, S. australis, Lindl., included by Mr. Ames in his S. sinensis, extends to Australia and New Zealand. Dr. Rogers, President of the Royal Society of S. Australia, tells me that it is the only Orchid which South Australia possesses in common with the Old World, though in Queensland and the Northern Territory the genera Goodyera, Epipogon, and Habenaria occur somewhat sparsely. From its photograph, S. australis might almost be taken for S. æstivalis, and like the latter grows in marshy ground, though the flowers are pink. It is worthy of note that its geographical isolation has not resulted in any marked variation from the type of its congeners in the northern hemisphere. I am indebted to the kindness of Mr. W. H. St. Quintin and the courtesy of the Editor of *The Garden* for permission to reproduce the accompanying photographs.

GHENT QUINQUENNIAL EXHIBITION.

THE chief floral event of next year will be the great exhibition at Ghent organised by the Société Royale d'Agriculture et de Botanique du Gand. This Society was founded as long ago as 1808, and the important event arranged for April 14th to April 22nd will constitute its eighteenth International Exhibition. On past occasions these shows have been regarded as the largest and most important events of their kind in Europe, and it is especially gratifying to learn that Belgium has recovered herself sufficiently to resume her former horticultural position.

The exhibition will be held under the high patronage of His Majesty King Albert of Belgium, who has offered a Large Gold Medal for the most varied and most meritorious collection of exotic Orchids grown by amateurs. For the best group staged by the trade growers an Œuvre d'Art is offered by M. Firmin Lambeau, Président du Cercle des Orchidophiles Belges. In both of these classes there is a second prize of 500fr. and a third of 200fr. For the best collection of 100 exotic Orchids there is an Œuvre d'Art valued at 500fr. in the amateur's section, while for a similar number staged by a trade grower, M. Ch. Dietrich, Vice-Président du Cercle des Orchidophiles Belges, is offering a valuable Œuvre d'Art.

No matter what description of Orchid an Amateur may be interested in, there is at least one class to suit his ambitions. Special prizes are offered for collections of 50 Cypripediums and Selenipediums, also for 25, or 50, or even a single plant of this popular section. The amateur who grows only Masdevallias will find special prizes to the value of 60fr., while for the more popular Odontoglossum crispum a prize of 300fr. is offered for the best lot of 50 plants. Odontoglossum hybrids, Odontiodas, Phalænopses, and Cymbidiums are all well provided for, and the valuable prizes offered will no doubt induce many amateurs and trade growers to compete in their respective classes.

Anyone specially interested in Orchids from certain localities will find special classes for the best collection of Orchids from Central America, from India, and from the Congo. Even the now rarely seen varieties of Anœctochilus are provided for, and no doubt some interesting examples of these beautiful foliaged plants will be staged. There are also special classes for Lycastes and Oncidiums, and, as may well be expected, several for the ever popular Cattleyas and Læliocattleyas. The florist has not been forgotten, for there is a class for the most varied lot of 50 Orchids yielding flowers most useful to him, and two classes for smaller lots of Orchids remarkable for the abundance of their flowers.

Classes 77 to 105 are devoted to Special Awards for Orchids remarkable for their culture and their flowers. In each class the first prize is 50fr. and

the second 40fr. Practically all the popular species and hybrids are included. They begin with Aërides and Angræcum, followed by Anguloa, and finish up with Stanhopea, Vanda and *Zygopetalum*.

M. Alexis Callier is again acting as President, and among the Members of Honour we note Lieut.-Col. Sir George Holford, Sir Harry J. Veitch and M. Firmin Lambeau, while the list of members includes Count Joseph de Hemptinne, Dr. Georges Ballion, M. Theodore Pauwels, M. Emile Praet and M. Charles Vuylsteke.

A booklet extending to 108 pages has already been published, and of the 778 classes described therein, no less than 85 are devoted to Orchids.

ANGULOA MEDIA.—It is well known that with regard to not a few imported Orchids their hybrid origin has been left in doubt until the suggested parents have been crossed artificially. But Anguloa media is a case of the reverse process having taken place. It was first raised by Messrs. Veitch, the parents being Ruckeri and Clowesii, but by a curious coincidence an imported Anguloa in the collection of Mr. R. H. Measures, of Streatham, which flowered soon after, and was supposed to be a new species, proved to be identical with the artificially raised hybrid.

PERISTERIA ELATA.—This stately plant has long been known as the Dove Orchid, from the fancied resemblance of the column and its beaked anther, combined with the ascending side lobes of the lip, to the figure of a dove. It is a native of Panama, where it was found in 1826 by Mr. Barnard, a Peruvian merchant, who appears to have sent plants to Mr. Harrison, of Liverpool, in whose stove-house it flowered for the first time in England in 1831. Messrs. Veitch give the following cultural note in their *Orchid Manual:* Peristeria elata is usually potted early in spring in a ocmpost of two-thirds well-rotted turfy loam, and one-third fibrous peat, with the addition of some thoroughly decomposed cow manure. Ample drainage should be secured by broken crocks to about half the depth of the pot, and the compost filled in above this to within an inch of the rim. The pseudobulbs should be placed on the surface of the compost, which should then be covered with sphagnum moss. When growth commences the plants should receive a liberal supply of water, which should be continued till the large new pseudobulbs are mature; the supply may then be diminished to so much as is sufficient to prevent them from shrinking during the winter months. As much air and light as is safely practicable should be afforded at all seasons, shading being used only during the earliest stages of growth and on bright days to prevent the foliage being scorched.

CHYSIS BRACTESCENS.

THE genus Chysis was founded by Lindley on C. aurea in 1837. Three years later C. lævis and C. bractescens were described; and in 1841 the latter was figured in the *Botanical Register*, when Lindley remarked that "in this, as in most other Orchidaceæ, the most exact attention should be paid to the markings and elevations of the labellum, for they furnish the

CHYSIS BRACTESCENS.

most constant and exact characters for distinguishing species. In the original Chysis aurea there are five principal ridges on the hypochilium, and three minor ones on each side, all downy, and diverging. In C. bractescens there are five equal ridges only, all smooth and parallel; and in C. lævis, there are three large somewhat confluent ridges, and one smaller on each side, the whole being smooth."

C. bractescens was introduced from Mexico by Mr. Barker, of Birmingham, in whose collection it first flowered in 1840. The individual flowers are three inches in diameter, on short stout pedicels, the sepals and petals ivory white, the lateral lobes of the lip are on the inner side yellow streaked with red, and the middle lobe is yellow stained with red. Regarding the cultivation of this elegant species, the following particulars are taken from Reichenbachia (vol. i., p. 41, t. 18).

Chysis bractescens is found growing in thick forests on the stems or large branches of trees. In the States of Vera Cruz and Tabasco it occurs towards the foot of the mountains at about 1,500 feet altitude, where the temperature ranges from about 70° to 80° Fahr., except during the winter season, when it was lowered by north winds. It is naturally a deciduous epiphyte, and is sometimes found growing on the trees by its roots alone. Seldom is this Orchid grown to perfection; generally it is represented by sickly plants, in many cases the result of growing them in hot, ill-ventilated houses. When well-grown, the pseudobulbs measure from a foot to eighteen inches and even two feet in height, and of proportionate thickness. It should be grown in a well ventilated part of the East Indian house during the greater part of the year, and should be in a suspended basket, so as to afford it abundance of light, though not fierce sunlight at mid-day. If grown in a pot, it should be placed on a high stage as near the roof as convenient. The pot or basket should be well drained, and the compost should be fibrous peat and sphagnum moss, sufficiently open or porous, so that the roots may penetrate freely and allow superfluous moisture to drain away. During active growth, which takes place in summer, an abundant supply of water must be given, and the atmosphere kept moist and well ventilated, in order to keep the foliage free from thrips, which are very liable to attack this Orchid when grown in a hot and dry house; frequent syringings overhead during hot and dry weather will tend to keep this pest away.

The resting period begins as soon as the current season's bulbs are fully developed, which is towards the end of summer. The plant must then be placed in a cooler and drier atmosphere, either in the same or another house. The lower temperature and dryness will conduce to the ripening of the bulbs, which is the chief point to consider, bearing in mind that the longest and best ripened bulbs produce the finest spikes of flowers. In early spring the plant will start again into active growth, when it should be removed to warmer and moister quarters. The flower spikes are produced from the new bulbs when about 5in. or 6in. long, which is about the middle of May, the flowers lasting in perfection two or three weeks. After the flowers are past, the plant may be subjected to a warmer and moister treatment. Imported plants usually flower well the first season.

THE AMATEUR'S PAGE.

ALTHOUGH the price of fuel is not so high as it was a few years ago, it is sufficiently costly to cause many amateurs to economise in its use whenever possible. Fortunately, the days of very high temperatures for Orchids have gone, and so much the better, not only for the majority of the plants, but for those whose pleasure it is to work in the houses. One of the first questions generally asked by an amateur when considering the purchasing of a plant is the temperature required for its successful cultivation. Many a beautiful Phalænopsis has failed to change hands when the required amount of heat has been mentioned, but this may be an extreme example, for there are numerous collections in which Cattleyas and various allied genera succeed admirably under the general conditions appertaining to the amateur's "hot-house." Now this so-called hot-house is very different from the highly tropical stove-house of olden days, and in effect it is generally a house or division nearest the boiler, and maintained about ten degrees higher than the cool-house, omitting, of course, any rise by day caused by bright sunshine.

It is somewhat difficult for an amateur to decide whether any particular plant should be placed in the cool-house or the hot-house, and with regard to hybrids the situation seems to become much more complex whenever the parentage is composed of both cool and hot-growing species. Take, for example, the pretty Sophrocattleya Doris, a hybrid between the cool-growing Sophronitis grandiflora and the hot-growing Cattleya aurea. This rarely succeeds well along with the Cattleyas, and the Odontoglossum house would be just as unsuitable. An intermediate temperature is much to its liking, and if no such house exists the difficulty may be overcome by growing the plant in the warm end of the Odontoglossum house during the summer months and in the cooler portion of the Cattleya house during the winter time. A little careful forethought in this matter will bring untold blessings to many an amateur's collection.

During recent years a large number of various Cymbidium hybrids have been raised. If we look for the reason, it is first to be found by the introduction in quantity of the elegant C. insigne Sanderi, which has been largely made use of by the hybridist on account of its useful and attractive qualities, and secondly because Cymbidiums have proved themselves capable of filling so many requirements of the artistic floral decorator. It is not an easy matter to answer an amateur who inquires the exact temperature they need, or how low the thermometer may fall without any injury being done to his plants. Like the previously mentioned example of Sophrocattleya Doris, much depends on the parentage. If the parents are from a warm locality, then good results must not be expected by placing the resulting hybrids in a

cool-house, nor will cool-growing species from a high mountainous district yield hybrids that will succeed in a close and humid hot-house.

Cymbidium insigne was found on the high plateau of Southern Annam at an elevation of about 5,000 feet. The minimum temperature during the winter months is from 45 to 55 degrees, and the maximum 65 to 75 degrees; during the summer months slightly higher figures are reached, but the thermometer very rarely exceeds 80 degrees. From these figures C. insigne may be classed as a plant requiring an intermediate house temperature. In the case of primary hybrids, of which C. Pauwelsii (insigne × Lowianum) is a well-known example, the temperature may be regulated according as to whether the second parent needs a higher or less temperature than insigne. Generally speaking, all hybrids of insigne have been made with cool-growing species, which include Lowianum, eburneum, Hookerianum, tigrinum and Tracyanum. From these remarks it is apparent that the majority of Cymbidium hybrids will succeed admirably in the cool-house during the summer months, and also during the winter if the temperature does not fall below 45 degrees. An occasional 40 degrees will probably do little harm if the atmosphere is not unduly charged with moisture.

It is always a matter of satisfaction to possess handsome and well-grown plants. The ambition of every amateur should not be restricted to only keeping his plants alive in as low a temperature as they will submit to, but his full endeavours as an amateur cultivator should be directed into really cultivating the plants to their fullest attainments. Individual attention is one of the great secrets. With each change of season, or even spell of weather, much can be accomplished towards this end by moving various plants from one position to another that will suit them better. A single thermometer suspended from one of the rafters is no true guide to the exact conditions under which many of the plants are often only attempting to exist. In some houses the staging is so far from the glass that a difference of at least ten degrees can be measured. In other houses one end is many degrees hotter on account of being near the boiler, or the end of yet another house may be heavily shaded by an adjoining tree. Plants suspended in pans or baskets from the roof are generally in a much higher temperature than those nearer the ground, and when near an open ventilator they are surrounded by a very much drier atmosphere than the plants near a saturated under-staging of coke or similar material. These are only a few of the many points which render a house, or any portion of it, suitable or otherwise for the successful cultivation of Orchids, and it should be the amateur's pleasure to so use his knowledge that the best results obtainable under existing circumstances are secured. Nothing succeeds like success, and the amateur who achieves good results with plants of simple needs will very soon desire to attempt the cultivation of others.

THE GENUS PLEUROTHALLIS.

ALTHOUGH several hundred species of Pleurothallis have been described, there are very few indeed that an amateur would consider worthy of cultivation, or worth the risk of importing. But, on the other hand, as the plants require very little space for their cultural needs, and as many of them yield minute flowers of wonderful construction, the following account by Lindley in his *Folia Orchidacea*, a rare work published in 1859, may prove of interest :—

" My own collection is doubtless the largest in the world, by far, and I have dissected every species in it, at least once, often many times. Yet I skrink from that creation of genera which some observers find so easy. All that a very long and careful study enables me to do is to cast the species in a rather artificial mould, so grouping them that they can be easily studied and identified. Beyond that I dare not venture to proceed. Upon what ground the sections stand will be seen from the following description :—

1. There is a group of species with great coriaceous leaves, long herbaceous spathes, and numerous racemes of fleshy flowers, rising above the leaves. These are the aristocracy of the genus, although some approach very nearly the mean genus Stelis ; they form my Spathaceæ.

2. Many others there are, conspicuous for their large leathery leaves, usually heart-shaped, pouring forth great membranous flowers in racemes, or usually smaller ones in clusters, all without conspicuous spathes ; such form the Macrophyllæ racemosæ, and Macrophyllæ fasciculatæ.

3. Then come large leaved plants with winged stalks, sometimes resembling a thin stiletto, and fasciculate small flowers : these are Sicariæ.

4. Immediately follows a crowd, many of which resemble Octomerias, all with fasciculate flowers and leaves tapering to the base ; to these is applied the name of Aggregatæ.

5. Much like the last is a little group with the points of the petals distended into a gland, offering a passage to the genus Restrepia, of which they are kinsmen ; whence they are called Restrepioideæ.

6. Close to Aggregatæ, but with the inflorescence developed into a raceme, stands a herd, none of which are able to extend it beyond the summit of the leaves ; hence the name of Brachystachyæ.

7. Then the development of the floral axis is manifested by long racemes of flowers rising high above the leaves, as in Elongatæ.

8. And parallel with these are other species in which the lengthened axis is accompanied by a well marked attenuation of the sepals ; the Acuminatæ.

9. Having considerable relation to the last division, but with little or no development of the stem, appear the Apodæ, or species in which the

stem, if present, is much shorter than the leaves; and of them some form dense tufts; the Apodæ caespitosæ, while others crawl upon the ground; the Apodæ prorepentes.

10. Finally, a very small number of species casts off the character of a creeping or shortened rhizome producing erect one-leaved stems, and form an ordinary stem with leaves alternating with each other in the usual way. These, the Caulescentes, close the genus. The parallel of these is to be found among the Labiated Stelises.

SATYRIUM PUMILUM.—In this species the colour of the galeate lip is dull yellow, striped with brown within in the manner of many Stapeliæ. The flowers have a heavy odour of putrid flesh, also exactly resembling that of many Stapeliæ. "This circumstance," remarks Bolus (*Orch. S. Africa*, i., t. 25), "taken in conjunction with the marking of the lip, is of much interest; though the occurrence of such a smell is not unknown in Orchids, notably shown in Bulbophyllum Beccarii, yet it is somewhat uncommon. There were no Stapeliæ to be seen in the immediate vicinity. The species is also structurally an interesting one. In no other is the consolidation of the sepals and petals carried nearly so far."

CULTIVATION OF HARDY ORCHIDS.—The following note is taken from a little Orchid Manual by Thomas Appleby, published about sixty years ago:—"If any enterprising cultivator is desirous of making himself famous in the gardening world he should try to cultivate these elegant plants (Hardy Orchids). If successful he would be doing a great service to his brethren by making known the means he has employed to succeed. Many have tried and failed, I verily believe, for want of perseverance. The means hitherto used for most of the British kinds has been to take them up with balls when in flower, and transplant them to the flower-border, where they soon die; or to put them in pots, and keep them in a cold frame, where they languish for a year or two, and then appear no more. I remember my friend, Mr. Wm. Barnes, exhibiting some years ago a large pot of Cypripedium spectabile as well grown as need to be wished, with nearly twenty fine blossoms expanded at once. I remember also when I was a youth obtaining a large plant of our English Lady's Slipper gathered near Settle, in Yorkshire; it had upwards of a score of what are technically called 'rises' on it— that is shoots, and every shoot I made into a plant by division, and every one grew and flourished as long as I had the care of them. The secret of this success arose from the fact that I took heed to plant divisions in a similar soil to that in which the plant had grown in its native habitat, and planting them also in a similar situation to that in which they grew wild."

CATTLEYA CITRINA.

NOTWITHSTANDING all the skill and attention that has been bestowed upon this plant for many years past, there is still much to be learnt regarding its cultural requirements. Now and again we hear of success being attained, but only in regard to a single, or at the most, a couple of plants. It is within the power of the majority of long-experienced cultivators to recall houses entirely filled with hundreds of Cattleya Mossiæ, of C. labiata, as well as of many other popular species, and of the immense quantities of flower that in due season were produced. But can anyone imagine a house full of Cattleya citrina flowering profusely and filling the air with its delicious perfume. It would indeed be a sight worth many a mile of travelling. So far as amateurs are concerned, the growing of numerous imported plants in order to discover choice varieties has long since gone, and even the florist who grows certain species in quantity for their bloom is not likely to select C. citrina as a suitable subject.

But have all possible methods been tried to cultivate this refractory plant. It may be that its very generic name leads us astray. Without second thought, an amateur would place Cattleya citrina along with others of the same genus in the Cattleya house, and if it failed to succeed then its constitution is blamed. If this plant had an entirely different generic name, then its treatment would be just as likely to differ accordingly. It would, therefore, be well to forget all about its Cattleya associations, and reason out a method of treating it on other lines.

One of the points which appear to be worthy of primary consideration is the altitude at which this species is found growing in Mexico. Some authorities give elevations ranging from 6,000 to 7,500 feet, while others state even higher figures. Concerning the altitudinal distribution of Orchids in Mexico, Mr. W. B. Hemsley has stated (*Biol. Centrali-Americana*, p. 305) that "Odontoglossum nebulosum and Cattleya citrina live on the tall oaks of the Cerro de Capulapam and the peak of San Andres at altitudes exceeding 10,500 feet, and they are doubtless the only epiphytal species that ascend to so great an elevation in Mexico." Here we have important evidence of the buoyant and keen mountainous atmosphere in which this species dwells, No such hot and stuffy atmosphere as is often to be found in the Cattleya house during the summer months. Even an Odontoglossum house might lack sufficient movement of the atmosphere to suit Cattleya citrina. No range of glass house is identical in construction with another, nor are the atmospheric conditions exactly similar in any two houses put to the same use. Perhaps the corridor, where one exists, in a range of glass would prove to be a suitable place, for really we seem at a total loss as to whether Cattleya citrina requires a low temperature

combined with bright light, or, shall we suggest, a well ventilated position with ample moisture and, perhaps, but little shading. The cultivation of this plant appears to be even more difficult than that of Vanda cœrulea.

MASSACHUSETTS HORTICULTURAL SOCIETY.

THE Massachusetts Horticultural Society, the oldest Society of its kind in America, having been incorporated in 1829, has recently issued its Annual Report for the year 1921. At the Inaugural Meeting, the incoming President, Mr. Albert C. Burrage, gave an address entitled, "A Plea for the Exotic." On April 23rd an exhibition of Native New England Orchids was arranged by President Burrage, and scheduled for two days only, but so great was the attraction that it was kept open for a week longer. This is stated to have been probably the most successful exhibition from the view-point of attendance the Society has ever held, the visitors numbering 22,000. It gave more pleasure to more people at a less cost per capita to the Society than any other show of the year.

During the year Gold Medals for group of Orchids were given to Messrs. A. C. Burrage, J. T. Butterworth, A. N. Cooley, and the Julius Roehrs Co., as well as to Mr. Oliver Lines for superior cultivation of hybrid Cattleyas. Appleton Gold Medals were awarded to Messrs. J. T. Butterworth, Walter Hunnewell, A. C. Burrage, Clement Moore, G. E. Baldwin, and E. B. Dane, for groups, to Mr. Geo. I'Anson for superior cultivation of Odontoglossums, and Mr. A. N. Cooley for Brassocattlælia The Baroness. Silver Medals were granted to Mr. Walter Hunnewell for a group of Dendrobiums, Mr. E. S. Webster for the best twelve Orchids staged on April 6th, Mr. A. W. Preston for Brassocattleya Hilda, Mr. A. N. Cooley for Slc. Meuse var. Gen. Nivelle, the Julius Roehrs Co. for a collection of Odontiodas, the Muller-Sealey Co. for Cymbidium Pauwelsii, Mr. A. C. Burrage for a specimen plant of Cattleya Skinneri, and at the meeting held Sept. 22nd to Mr. A. C. Burrage for Odontoglossum grande and Vanda Lowii, and to Mr. A. N. Cooley for Cattleya Princess Royal, this being adjudged the best Cattleya in the exhibition.

First-class Certificates of Merit were awarded to Cymbidium Doris, Odontioda Massachusetts, Odontoglossum amabile var. Illuminator, Odontoglossum Crawshayanum, Læliocattleya Sunrise, Odontioda rose-fieldiensis, Læliocattleya California, Lc. labiosa, Miltonia Hyeana var. F. Lambeau, Odontoglossum crispum, O. ardentissimum Johnsonii, Phalænopsis Veitchii, Lc. S. O. Stevenson, Odontoglossum Aztec, Odontioda Wilsoni, Cattleya Peetersii Memorial to Cardinal Gibbons, and Sophrocattleya Queen Empress. All the above were exhibited by President A. C. Burrage. Similar awards were granted to Cattleya Mossiæ Reineckiana,

Blc. Joan "Potin's var.," Brassocattleya speciosa grandis, and O. crispum, exhibited by A. N. Cooley; to Cypripedium J. T. Butterworth, staged by Mr. J. T. Butterworth; to Odontioda Joan var. Mrs. Harding, exhibited by Mr. J. B. Duke; to Odontoglossum lutescens, staged by Mr. E. S. Webster; to Dendrobium Victoria Regina, staged by Mrs. Andrew Adie; to Cattleya Leda and C. Ingramiæ alba, exhibited by Mr. L. D. Towle; and to Cypripedium King Arthur and Cyp. Diabolo, staged by Mr. E. B. Dane.

Cultural Certificates were awarded to Mr. Douglas Eccleston for Cattleya Trianæ and Brassia verrucosa, and Honourable Mention to Odontoglossum tentaculatum and Cyp. Lady Wimborne, staged by Mr. J. T. Butterworth; and to Miltonia Bleuana, Orchidvale var., exhibited by Mr. A. C. Burrage. The A. C. Burrage Silver Cup was awarded on April 6th to the Julius Roehrs Co. for a display of Orchids occupying a space of 200 sq. ft.

ODONTONIAS.

NOTWITHSTANDING many attempts, some time elapsed before success was obtained in crossing the genera Odontoglossum and Miltonia. It was not until 1905 that Odontonia Lairesseæ made its appearance. This has for its parents O. crispum and M. Warscewiczii, two dissimilar species, although both are natives of Colombia. Two years later came Odontonia Ellwoodii, obtained by crossing the Colombian M. Rœzlii with the Ecuadorean O. cirrhosum, and in rapid succession many more hybrids of M. Warscewiczii, all showing strongly the characteristics of this distinct species. One of the most interesting, as well as beautiful hybrids in this section, is the xanthotes variety of Odna. Magali Sander, obtained by crossing the rare M. Warscewiczii xanthina with O. ardentissimum xanthotes. The tall spikes bear flowers of a creamy white tint, and with the yellow markings seen in both parents. There are three hybrids which are worthy of mention as showing the relationship that exists between species geographically separated. They are Odna. Cybele, between the Brazilian M. candida and the Ecuadorean O. cirrhosum, Odna. Langowoyi, raised by crossing the Costa Rican M. Schröderiana with the Guatemalan O. Uro-Skinneri; and Odna. Lucilia, the result of crossing the Brazilian M. spectabilis with O. cirrhosum. The two former appeared in 1913, and the latter during the following year.

By far the most showy Odontonias exist in the various hybrids of the M. vexillaria section. The flowers are not quite so large as those of M. vexillaria, but they possess other qualities which have already made them great favourites. The soft rose ground and the purple mask combined with the various markings of the Odontoglossum parents have made some

truly beautiful flowers. The climate of the United States is, generally speaking, a little too warm for the majority of Odontoglossums, hence the necessity of producing plants that will prove suitable and be of service where flowers for decorative purposes are required. M. vexillaria is a species that delights in somewhat warmer conditions than those maintained in the Odontoglossum house, although the flowers possess the unfortunate character of being very fragile, in fact, they are almost useless when severed from the plant. The combination of Miltonia and Odontoglossum yields hybrids suitable for the United States climate, and the plants give spikes of bloom that are far more useful to the floral decorator than any species of Miltonia. M. Rœzlii is of similar constitution to M. vexillaria, although, strange to say, when mated with it the resulting flowers are larger than those of either parent. Many very beautiful Odontonias have recently been produced through the use of M. Bleuana. In Odontoglossums it is generally the broad petals that possess the attractive points, but in Odontonia it is the expansive labellum that at once appeals to the amateur. As time goes on, we shall see Odontonias with much broader petals, and it is the happy combination of the broad petals of the one genus and the expansive labellum of the other that will come into being in the future.

MILTONIA WARSCEWICZII XANTHINA.—The varietal name xanthina is applied to varieties in which the usual brown and purple markings are absent, leaving the flower white with some light yellow marks. As long ago as 1881 there was a distinct form of this species in the collection of Mr. C. Winn, Selly Hill, Birmingham. It was described by Reichenbach as variety ætherea, the sepals and petals being lightest yellow with white tips, the lip similar, but bordered and based with lightest mauve-lilac. Two years later the variety xanthina appeared in Mr. William Lee's collection at Leatherhead. The sepals and petals were marked with deeper yellow, the lip light yellow, but with no purple whatever. In the autumn of 1901 Messrs. Charlesworth had a similar kind in flower. During recent years several beautiful hybrids have been produced by using this variety in connection with xanthotic Odontoglossums, a well-known example being Odontonia Magali Sander alba. Miltonia Warscewiczii was originally discovered by Poeppig, in 1830, near Cachiro, in Peru, and was again found by Warscewicz, who brought dried specimens to Europe. Gustav Wallis sent specimens to Messrs. Linden in 1868, and one of these was exhibited at the Royal Horticultural Society in October, 1869. In later years it was collected by Burke, for Messrs. Veitch, and was then found growing on small trees and shrubs close to the ground, and on moss-covered stones at 2000 to 3000 feet elevation, near the Rio Verde, in the Province of Antioquia.

AN AMATEUR'S EXPERIENCE.

By JOSEPHINE R. WALKER.

I AM pleased to say we have been successful in overcoming the attack of thrip. It has been a struggle. We found that the only way to eradicate it was by going over each individual plant as often as possible and painting with insecticide. It was chiefly down in the sheaths of the Lælias and Læliocattleyas that these insects seemed to lurk. No fumigation appeared to affect them at all. There are still a few lurking about, but they have a hard time and will have to go under.

Our Dendrobiums have grown splendidly this year; some of them have made bulbs better than those produced in their native habitat. We have brought them out into the sun and air; they are rooting vigorously, so we are hoping to get a good show of flowers in the spring. We shall be able to take them into the "Monkey House" and give them more heat than we have been able to in other years. We have had a bit of a struggle with D. fimbriatum and D. Brymerianum, but I think we have mastered them. They are up in the roof in the "cradle" with Vandas, and getting away nicely.

In spite of the lack of sun this year our Mexican Lælias have done splendidly, and many of them are showing their flower spikes. We have about fifty of them altogether, and when they are in bloom there is nothing more graceful. Their only enemy in this locality appears to be fog, and this they will by no means endure. Our Læliocattleyas have also done very well, and we are going to have some fine sheaths in them, many of which are well up.

We have just acquired about sixty choice Odontoglossums and Odontiodas, and are going to have a real good try to make them grow. We have put them at the very end of the house, where they will enjoy the shade of the tree, and as further assistance we have made curtains to draw across inside, cutting this portion off from the rest of the house, so preventing the sun from reaching them during the day time, and keeping off the the heat from the pipes at night. There are no hot-water pipes in the part selected for these plants. In spite of these precautions and the fact that we have had very little sunshine, it is difficult to get down to 55 degrees at night, and to keep under 70 degrees in the daytime. We have the plants standing on a liberal depth of ashes, which are on slates, and the walls are of bricks. We keep as much moisture as possible around them, and the syringe is used overhead many times a day and always the last thing at night. So far the plants are looking well, and many are throwing up good spikes. When they came to us we decided, rightly or wrongly, that they had too many back bulbs and were in pots that were much too large, so we broke

them up and repotted them in the smallest size that would comfortably suit. I do hope they will do well with us. I suppose we have a much better chance with the hybrids raised in this country than with the imported species.

I remember, some years ago, we acquired about twenty-four of the finest Odontoglossums I have ever seen, and put them on the shelf where the Mexican Lælias now grow, close to the glass and in the full blaze of the sun. To make doubly certain of killing them they were allowed to go chip dry after they had bloomed. Yes, strange to say, they did bloom—once! My husband and I often laugh over this tragic incident. From what we can gather from various authorities the Odontoglossum family never require to see the sun, and never to get really dry. However, Linden says he thinks that more good than harm will accrue from allowing the compost to dry out at least once a year. One of our leading growers, who had seen a fine amateur's collection of Odontoglossums grown warmer than usual, told me a short time ago that perhaps our race of garden hybrids will be better for it. Anyway, it is "must" with us.

Our Oncidiums are going along splendidly, even the smallest plants we acquired early in the year and which were nearly done have responded well. Each one has made a good bulb, and several of them produced a spike, which we cut out, resulting in bulbs being made twice the size of the last one. So perhaps next year we shall have plants that are capable of carrying a decent spike without taking too much out of their constitution.

The Cymbidiums have grown very strongly this year. The absence of sun and cooler conditions have suited them admirably; we are looking forward to a fine lot of spikes of these beautiful and lasting flowers. We have got together quite a collection of Cymbidium insigne Sanderæ; no two plants seem alike in colour. Some of the varieties are very beautiful, both in size and colour. We were told by a grower who is very successful with them that the secret of robust plants and big strong spikes is to put one-fifth dried cow manure with the compost when repotting, and not to give them too much pot room, also to pot oftener. We have tried this method on some of our plants this year, but up to the present cannot see any difference between those so treated and the plants potted in the usual compost. There may be a difference in the spikes of bloom. We shall see anon.

SHROPSHIRE HORTICULTURAL SHOW.—At this important event, held August 16th and 17th, Messrs. J. Cypher & Sons, Cheltenham, were awarded a prize of £35 for a beautiful group of foliage plants and Orchids occupying an area of 250 sq. feet. Other recipients of medals included Messrs. Stuart Low & Co. and Messrs. Sanders.

NOTES ON SUSSEX ORCHIDS.

DURING several successive years it has been my pleasure to spend a few occasional days collecting Sussex Orchids. By collecting I do not mean digging up every plant discovered and chancing to fate whether they will survive when planted in my garden, but noting the conditions under which I have found them, and generally bringing home a few representative spikes of the various species and their varieties. Growing to no great height, and generally intermixed with other vegetation, their real beauty is not always discerned until a plant in full flower is placed upon a table or the staging of a greenhouse, where the characters can be compared with other members of the family; sometimes these consist of relations from a foreign land.

In the early part of the year I make frequent journeys in search of the shining green and spotted leaves of Orchis mascula, and having marked the situations it is not many weeks before the flower spikes again attract my notice. This species is not only plentiful, but is to be found growing in a diversity of soils and situations. The plants usually found by amateur explorers are those fully exposed to view in open fields, where they lead a semi-starved existence. My best finds have always been on the shady side of hedges and woods, where the moist soil and air bring forth much finer results. On one occasion really good spikes were found in the partial shade of a thin wood, and still better ones when I descended the side of an old iron-stone quarry. The finest it has been my good fortune to find were from the moistest and shadiest area in the centre of one of the quarries, where since its disuse many years ago a considerable depth of decayed vegetable matter has accumulated. Several plants that I removed from open fields to more congenial positions in my garden have vastly improved in size and quality. A few years ago I came across a young plant, apparently unflowered, that lacked the typical spotting on the leaves, and, believing that I had discovered an albino variety, carefully removed the same to my garden for security's sake. Two seasons later it produced a lovely spike of pure-white flowers, and fully satisfied my long expectations. Soon after the flowering period, the foliage of this species decays, and thus one of our little treasures is hidden and preserved beneath the surface of the ground until another season.

Just after the spikes of Orchis mascula have reached their full beauty, the flowers of Orchis Morio make their appearance. In a large meadow I found, about the middle of May, a multitude of plants in all degrees of colour from the darkest purple to the lightest pink, but in every case the petals were distinctly marked with green veins, hence the name "Green-winged Orchis." All these plants were growing on the northern side of a

row of tall oak trees, and were thus protected from the heat of the mid-day sun. The poorest plants were those nearest the trunks of the trees, the best ones about 100 feet away in partial shade, after which the plants were gradually poorer, and with shorter spikes, as they became less and less protected by the shade of the trees. The following season I searched the same meadow, but failed to find a specimen, due, I believe, to the fact that chemical manure had been applied during the winter. However the plants have since reappeared, although somewhat less in number. The foliage of this species lacks the shining green nature of O. mascula.

In the month of June my excursions always include visits to open woods in search of Habenaria bifolia, the Butterfly Orchid. The erect spikes of about a foot or more in height bear whitish flowers with the long spur so characteristic of the genus. The flowers are fragrant, the more so after an evening shower of rain. The broad foliage of this species is noticeable at a much earlier period of the year, and I never remember a season in which the apical half of the leaves had not been severely injured by frost, yet no apparent harm was done to the general welfare of the plant. I have more than once wondered why some expert has not crossed this species with one of the warmer growing Habenarias that are cultivated under glass.

The Sussex Downs prove a good locality for the interesting Ophrys apifera, commonly called the Bee Orchid, in allusion to the remarkable resemblance which the lip of the flower has to a bee. In distinguishing it from other members of the genus, I find the little hook-like appendage on the tip of the column most useful. Varieties seem scarce, but a friend once discovered a pretty form having white sepals and petals, the former with a median green line, and the lip light green. It constitutes the rare albino variety. Knowing how this plant has a liking for chalky soil, I have endeavoured on several occasions to transport specimens to my garden, always accompanying the removal with some of the surrounding chalk, but always reaping failure. I know not the reason, unless it be an unsuitable atmosphere.

Listera ovata, the Tway-blade Orchid, is easily found if search be made in very moist and shady places. The fibrous root system, instead of tubers, suggests that it makes but little provision to conserve the necessities of life, hence continual moisture is indispensable. The green-coloured flowers, although by no means attractive, possess an interest all their own, for, as Darwin has pointed out, if the crest of the rostellum be touched ever so lightly a large drop of fluid is immediately expelled. Plants in my garden have done well so long as I kept them very moist, but neglect in this matter during a dry summer was the cause of their disappearance before the following year.

I once received a note from a friend inviting me to visit his shrubbery

and see five dense spikes of brownish flowers that had sprung up from beneath the surface of the ground, and with no foliage whatever. My anticipations were realised on arrival, for the flowers were good examples of Neottia nidus-avis, the Bird's-nest Orchid, so named on account of the resemblance which the entangled fibres of the root system have to a crow's nest. The plant dies after flowering, but is able to reproduce itself from the points of the rambling root fibres, and in again coming to the surface at some little distance has given rise to the suggestion that it travels underground.

A. G.

ROYAL VISIT TO WESTONBIRT.

THE early part of August is by no means a period for an abundance of flower to be seen in the Orchid houses. It is therefore interesting to record the approximate number of Orchid flowers with which the dinner tables were decorated during the recent visit of Her Majesty Queen Mary to Westonbirt, the seat of Lieut-Col. Sir George Holford, K.C.V.O.

On one evening over a hundred blooms of Cypripedium Maudiæ were used. This mode of decoration so pleased Her Majesty that at her request it remained for a second evening. The restful and chaste beauty of this Lady's Slipper when used with the exclusion of all other flowers elicited praise from all who saw its charming effects. Needless to say, these flowers were particularly fine, coming from large plants of the best magnificum type. On another occasion over one hundred of the finest Cattleyas were selected from the 400 blooms that were open during Her Majesty's visit. Noteworthy among them for the brilliancy of colour were the dark forms of Cattleya Warscewiczii, of which Low's variety, Meteor and Othello may be specially mentioned. There were also fine examples of C. Hardyana, with rich crimson spikes of five and six blooms, C. Lord Rothschild, C. Thurgoodiana, C. Dupreana, C. Van Houtte, Læliocattleya Lustre, Lc. lustrissima, Lc. Sargon, and many other similarly large-flowered hybrids, all of which had been raised at Westonbirt. Such fine Cattleyas, with their splendid upright spikes of bloom, and intermixed with the many brilliant hybrids, including Lc. Fulva, Lc. Golden Wings, Lc. Armada, etc., which have been developed in late years at Westonbirt, formed a magnificent display during the Royal Visit.

Her Majesty took a keen interest in the flowering plants, and more especially in the process of raising the hybrids from their initial state, when a magnifyng glass is required to discern the tiny specks, to the fully grown plants of flowering size. By fortunate chance, during the period of The Queen's visit, the first flower opened of a new hybrid. It is the result of crossing one of the best of the superbly coloured varieties of Lc. Lustre

with a specially fine C. Peetersii, both of which parents were raised at Westonbirt. An analysis shows that it contains in varying degrees C. labiata, C. Warscewiczii, C. aurea, C. Lueddemanniana, and L. purpurata. The result is a well-balanced, richly coloured Cattleya flower of large size and with a deep crimson-purple lip. Although the plant is still a small one, it gives great promise. Her Majesty was pleased to allow the dedication of this new hybrid as a memento of her visit. Every Orchid lover will look forward to the day when Læliocattleya Queen Mary will be exhibited in London before the Orchid Committee of the Royal Horticultural Society.

Though Orchids are of special interest to readers of this journal, they comprise but one of the many attractions of Westonbirt: the famous Arboretum, the beautiful Park, the matchless collection of Amaryllis, the stately mansion rich in treasures, and, above all, the charming personality of the owner—Sir George.

SHREWSBURY FLORAL FETE.

THE quaint old town of Shrewsbury has again given horticulture a splendid example of its energy and foresight. The great floral exhibition held there year by year has just passed, but leaves an indelible impression on all visitors. Seventy excursion trains, as well as innumerable motor cars, brought nearly a hundred thousand visitors to the Quarry Gardens, an ideal situation well within the precincts of the town and easy of access from the station. Shrewsbury show rivals that held at Chelsea, and surpasses it as regards the enthusiasm of its visitors.

Orchids are not so numerous as at Chelsea, and though their place is filled by artistic groups of foliage plants, their absence is much to be regretted. Though the large groups of Orchids are missed, individual plants are well in evidence, and Orchid flowers are largely employed in the classes for Bouquets, etc. Mr. C. J. Vickers, Leicester, was awarded a small Gold Medal for an exhibit of floral designs, two of which were composed entirely of Orchids; blooms of Cattleya Forbesii, now seldom seen, C. Harrisoniana, and many richer-coloured hybrids were used. C. Forbesii has never been rated a first-class Orchid, the C. labiata section overpowering its rather small blossoms. But size is not always a consideration in floral work, and the dainty fawn or tawny hues, accentuated by the white-tipped and veined lip, were evidently appreciated by Mr. Vickers. In the class for Hand Bouquets, Mr. Vickers was first with a beautiful arrangement composed of Odontiodas, Odontoglossums, Oncidiums, Cypripedium Maudiæ, and Læliocattleyas. Mrs. J. Nixon gained the second prize with a pleasing arrangement of Cattleya blooms,

Dendrobium Phalænopsis Schröderianum, and pretty sprays of Odontoglossum.

In the class for three Bouquets, Mr. Vickers carried off the first prize for attractive designs entirely composed of Orchids. Mrs. J. Nixon, of Alderley Edge, came second, the components of her exhibit being very similar to the preceding. A small Gold Medal was awarded to Messrs. Stuart Low & Co., for a group of Carnations and some fine varieties of Cattleya Warscewiczii, hybrid Cattleyas, Aërides odoratum virens, Dendrobium formosum giganteum, etc. Messrs. Sanders, St Albans, received a similar award for a pretty group of Orchids. Included in it were two richly coloured forms of Stanhopea tigrina, and a third plant, with a six-flowered inflorescence, apparently allied to S. Shuttleworthii. The curious shape and the mode of flowering of these plants elicited many remarks from the visitors. Cattleya Hardyana regalis, C. Thurgoodiana, C. triumphans, Lc. fulvescens, Vanda cœrulea and Cypripedium Maudiæ were effectively displayed in this group. A novelty was seen in Cattleya Shrewsbury (Undine × Juliettiæ), white, with a deeply frilled lip, and waved sepals and petals.

In the groups of miscellaneous and fine foliage plants occupying 250 sq. ft., Messrs. Cypher & Sons, Cheltenham, were first. They showed Cypripedium Rossettii giganteum, various hybrids of C. Rothschildianum, numerous Læliocattleyas, Anguloa eburnea, Cœlogyne Mooreana and Odontoglossums. Sir George Kendrick, of Edgbaston, was second with an admirable group, in which Oncidium flexuosum, a very fine example of Dendrobium superbiens, Cattleya Warscewiczii in variety, Epidendrum vitellinum, and Dendrobium Gibsonii were in fine form. The charming white Brassavola cordata, which evidently may be relied upon to flower year after year, was represented by several well-flowered examples.

W. R. Manning, Esq., of Dudley, was third with a very fine group, in which Orchids were not quite as numerous as in the others, but Lælia crispa, Cattleya Warscewiczii and Vanda cœrulea were well placed. Orchids in miscellaneous groups are possibly shown to better advantage than when staged by themselves. The clear outlines and the colouring of their flowers are then better contrasted against the varied shapes and colours of foliage plants. Certainly, as used in these miscellaneous groups, the Orchids seem to add the finishing touch.

E.C.

CORYCIUM CRISPUM.—A recent number of *The Flowering Plants of South Africa* (vol. II., pt. vii.) contains a coloured plate of Corycium crispum, which is the first member of the Orchidaceæ to appear in this work. This Orchid, originally described by Schwartz as long ago as 1800, belongs to the large group of terrestrial kinds which are characteristic of the South

Western region of the Cape Province. At the present time it is said to be fairly common. Bolus figured it in his *Orchids of South Africa* (vol. I., t. 45), and states that the limb of the lip and the tips of the petals are bright golden yellow, the rest of the flower pale yellow; all parts except the side sepals are very fleshy. The crisped leaves are one of its distinguishing features.

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR.
Cattleya Thisbe	C. micans × C. Pittiana	Sanders.
Lælia Charm	L. autumnalis × L. grandiflora	Duke of Marlborough.
Læliocattleya Glorita	C. Rex × Lc. Thyone	Flory & Black.
Læliocattleya Idina	Lc. Soulange × C. Nena	Flory & Black.
Læliocattleya Rosita	Lc. Ingramii × C. Tityus	Flory & Black.
Læliocattleya Southfield Gem ...	Lc. Martinetti × Lc. Ganymede	W. Waters Butler, Esq.
Læliocattleya Victor	Lc. Purple Emperor × Lc. Rubens ...	Stuart Low.
Odontioda Burragei	Oda. Bradshawiæ × ?	A. C. Burrage, Esq.
Odontoglossum Aztec	O. Pescatcrei × ?	A. C. Burrage, Esq.
Odontoglossum Duke of York ...	O. percultum × O. illustrissimum ...	Mrs. Gratrix.
Sophrocattlælia Hague	Slc. bletchleyflora × C. Octave Doin ...	Stuart Low.

ROYAL HORTICULTURAL SOCIETY.

July 25th, 1922.

MEMBERS of the Orchid Committee present:—Sir Jeremiah Colman, Bart. (in the chair), Prince Tadashige Shimadzu, Messrs. Jas. O'Brien (hon. sec.), F. K. Sander, S. W. Flory, Chas. H. Curtis, J. E. Shill, H. T. Pitt, T. Armstrong, Pantia Ralli, J. T. Barker, Frederick J. Hanbury, and Gurney Wilson.

AWARDS OF MERIT.

Odontoglossum Topaz (regale × Lambeauianum), from R. Gerrish, Esq., Milford Manor, Salisbury (gr. Mr. W. Sorrell). The finely grown plant carried a tall spike with six handsome flowers, the ground colour primrose-yellow, the sepals and petals with maroon blotching, and the immense lip almost covered with a solid blotch of maroon-purple.

Odontoglossum Tagus (Othello × Doris), from R. Gerrish, Esq. The spike carried six medium-sized flowers of rich coloration. The sepals and petals rose-tinted, and very prettily marked with deep rose-purple. It should develop into a still finer state.

Disa Julia A. Stuckey (Italia × grandiflora), from Messrs. Flory & Black. Six very pretty examples of this new and interesting hybrid were staged, and the Award was given to one distinguished as superba. The broad lateral sepals are of bright scarlet, the dorsal sepal pink with purplish lines. This hybrid appears to possess a strong constitution.

GROUPS.

Messrs. Charlesworth & Co. were awarded a Silver Flora Medal for an attractive exhibit containing the handsome Odontoglossum majesticum, in which the central area of the blotching is almost suppressed, O. Agapetum (amabile × Maillardianum), with a spike of 13 large flowers, Odontonia, Corona (Warscewiczii × Harryanum), of rich yellow with chocolate blotching, Odontioda Sheila with a spike of 17 dark scarlet blooms, Cattleya Harold, very effective, and Cattleya Warscewiczii var. Mrs. E. Ashworth, with three blush-tinted flowers of large size.

Messrs. J. & A. McBean were awarded a Silver Banksian Medal for some remarkably well grown Miltonias of the vexillaria section. The spikes of M. Charlesworthii were much longer than usually seen, and those of M. Bleuana carried flowers of extra size. M. vexillaria candida had light rose streaks on the sepals, and the variety H. Milner is blush-white with light violet flush on the segments.

Messrs. Stuart Low & Co., staged Læliocattleya Aphrodite var. Eclipse, with a spike of three rosy-mauve flowers, the tips and central areas of the petals flushed with purple, making it a very distinct form of this well-known hybrid between C. Mendelii and L. purpurata. This firm also staged Blc. Everest var. Venus, a creamy-white flower in which the immense labellum has the fringed margin of crimson-purple colour.

August 9th, 1922.

Members of the Orchid Committee present: Pantia Ralli, Esq. (in the chair), Messrs. Jas. O'Brien (hon. sec.), Fred. K. Sander, C. H. Curtis, J. E. Shill, H. T. Pitt, S. W. Flory, T. Armstrong, Gurney Wilson, Stuart H. Low and Oliver Lines, of Pittsfield, Mass., U.S.A.

AWARD OF MERIT.

Cattleya Eleanor var. Prince of Wales (Hardyana alba × Warscewiczii var. F. M. Beyrodt), from Messrs. Hassall & Co. The plant carried a spike of three large flowers, the broad sepals and petals pure white, the expansive labellum bright violet-purple and lined with gold in the throat.

OTHER EXHIBITS.

A Silver Banksian Medal was awarded to Messrs. Hassall & Co., for an attractive exhibit of Cattleya hybrids. There were several fine varieties of C. Hardyana alba, bearing three and four large flowers on the spikes, the richly-coloured labellums making a strong contrast with the pure white sepals and petals. An excellent example of Læliocattleya Minos, bearing the varietal name Hero, carried a large flattish flower of deep rosy-mauve colour, the lip reddish purple.

Pantia Ralli, Esq., Ashstead Park, Surrey, exhibited Odontioda Manora

(C. Nœzliana × Oda. Coronation), with round segments of rich scarlet colour margined with rose.

H. Hanchet, Esq., Bankholme, Purley, staged Cypripedium Mrs. C. J. Hanchet, a handsome and well-proportioned flower, having broad drooping petals tinged with rosy-mauve and with dark spotting.

Messrs. Sanders exhibited a fine example of Anguola Cliftonii, the scarce Cirrhopetalum Andersonii, with an umbel of twelve pretty flowers, the new Cattleya Thisbe (micans × Pittiana) and Cattleya Dowiana var. Glory, a handsome form.

Messrs. Flory & Black staged Læliocattleya Rosita (Lc. Ingramii × C. Tityus), a new hybrid with rich purple sepals and petals, and a dark crimson lip. A fine variety of Cattleya Hardyana alba was also shown.

August 22nd, 1922.

Members of the Orchid Committee present: C. J. Lucas, Esq. (in the chair), Messrs. J. O'Brien (hon. sec.), Stuart H. Low, F. J. Hanbury, Richd. G. Thwaites, Pantia Ralli, F. K. Sander, A. Dye, H. T. Pitt, H. G. Alexander, J. E. Shill, A. McBean, E. R. Ashton, J. T. Barker, and Gurney Wilson.

AWARDS OF MERIT.

Læliocattleya Sargon, Westonbirt var., from Lt.-Col. Sir George Holford, K.C.V.O. In this example of the hybrid between C. Hardyana and Lc. Lustre the flower is of large size, purple-mauve in colour, the expansive labellum mottled with darker purple and carrying forward the characteristics of C. Lueddemanniana, one of the component species of Lc. Lustre.

Læliocattleya Golden Light (Lc. Golden Fleece × Lc. luminosa), from Lieut.-Col. Sir George Holford, K.C.V.O. This tall-growing plant carried a spike of three flowers, intermediate in size, and of bright orange-red colour with the lip crimson-red.

Læliocattleya Idina (Lc. Soulange × C. Nena), from Messrs. Flory & Black. A very pleasing hybrid of soft rose-pink colour with the large lip magenta-purple.

GROUPS.

Baron Bruno Schröder, Englefield Green, Surrey, was awarded a Gold Medal for a magnificent group of Cattleyas, the fine condition of which resulted in a Silver-gilt Lindley Medal being awarded to his grower, Mr. J. E. Shill. There were over a hundred fine plants of Cattleya Hardyana alba, some carrying as many as ten and twelve finely-developed flowers, the majority having five or six flowers on the spike. Several typical varieties with purple-coloured flowers were included, and there were good examples of Cattleya Hestris, of Lc. Golden Queen, with flowers of golden-buff

colour, and in the centre a most attractive variety of Lc. Golden Glow bearing an upright spike of five rich orange-yellow coloured flowers, the lip bordered with crimson.

J. J. Bolton, Esq., Claygate, Surrey, was awarded a Silver Flora Medal for an attractive exhibit containing many fine Cattleyas. Of these C. Hardyana alba was well represented, and the pure-white sepals and petals being well developed; C. Venus bore a spike of three bright red flowers, and C. Naidia exquisita, a lovely hybrid, carried a similar number. In the centre was a superb variety of Cattleya Diana majestica, the finely formed flowers having rich yellowish segments, the lip bordered with crimson. Læliocattleyas were represented by Salonika alba and excellent forms of callistoglossa.

Messrs. Stuart Low & Co. received a Silver Flora Medal for an extensive exhibit in which were several distinct forms of Miltonia vexillaria, the rare Aërides odoratum album, Dendrobium Dearei, the scarce Lælia xanthina, a fine example of Cattleya Germania with a spike of six large flowers, Lc. Victor, a neatly formed flower with segments of rose-purple, the lip bearing two bright yellow discs, and a selection of Cypripediums.

Messrs. Flory & Black secured a Silver Flora Medal for an attractive group. In it were some fine varieties of Cattleya Hardyana alba, C. Prince John (Dowiana × Hardyana), Læliocattleya J. J. Ansaldo, a pretty variety of Lc. Gothlab, a dark form of Lc. G. G. Whitelegge, and in the centre Lc. Glorita (C. Rex × Lc. Thyone), an effective combination, in which the large flower has the lip mottled with gold and purple.

Messrs. Sanders exhibited Brassocattleya Crofutiana, a large flower of soft rosy-mauve colour, some fine examples of Cattleya Hardyana alba, Cattleya Fulva, and a selection of Læliocattleyas, of which Brittania alba and Fatima were in fine form. A good example of Cypripedium Godefroyæ was also staged.

H. T. Pitt, Esq., Stamford Hill, exhibited a selection of interesting Orchids from his well-known collection. They included the rare Paphinia cristata, the beautiful Angræcum Scottianum, the scarce Catasetum Egertonianum viride, Cirrhopetalum miniatum, with reddish flowers, the singular Masdevallia simula, and a pretty variety of Lc. Chimæra.

His Grace the Duke of Marlborough, Blenheim Palace, showed Lælia Charm (autumalis × grandiflora), with a spike of two rose-pink flowers of large size; Brassocattleya Gladys, a charming blush-tinted flower; two examples of Cattleya Triumphans, and a richly coloured form of the very variable C. weedonaurea.

Lieut.-Col. Sir George Holford exhibited Læliocattleya Spalatro (C. Lueddemanniana × Lc. Aphrodite), a finely developed flower of much promise.

Messrs. Hassell & Co. staged Brassocattlælia Muriel, an immense flower of a uniform lilac-rose tint, the disc of the labellum yellow. Also fine examples of C. Hardyana alba and the handsome Lc. Soulange.

Richd. G. Thwaites, Esq., Streatham Hill, exhibited Cattleya Prince John var. Rosita, a handsome result in which the yellowish ground colour is almost covered with a dense mottling of purple, the lip rich purple, and the throat veined with gold.

MANCHESTER ORCHID SOCIETY.

July 13th, 1922.

MEMBERS of the Committee present :—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, B. J. Beckton, A. Burns, D. A. Cowan, J. C. Cowan, A. Coningsby, A. G. Ellwood, J. Evans, W. Giles, J. Howes, W. M. Jackson, A. Keeling, D. McLeod, Dr. F. J. Paul, E. W. Thompson, J. Whittam and H. Arthur (secretary).

S. Gratrix, Esq., West Point, staged a group to which a Silver Gilt Medal was awarded. Other exhibitors included A. Hanmer, Esq., Buxton, and Messrs. A. J. Keeling & Sons, who staged Odontoglossum hybrids, and Messrs. J. Cowan & Co., who exhibited Odontoglossum Penelope with a spike of twenty-three flowers.

FIRST-CLASS CERTIFICATES.

Odontioda West Point Beauty, of fine shape, deep salmon and scarlet; Oda. Chanticler var. militaris, brilliant in colour; Oda. Ganesa, purple blue; Cattleya Harold var. Mont Blanc, sepals and petals pure white, lip white with magenta centre: from S. Gratrix, Esq.

Odm. eximium var, Joyce Hanmer, of fine shape and intensely dark: from A. Hanmer, Esq.

Bulbophyllum macrobulbum, fleshy flower, cream colour, with reddish chocolate spotting: from H. T. Pitt, Esq.

AWARDS OF MERIT.

Odm. St. George var. Papilio; Odm. West Point excellens; Odm. Conqueror West Point var.; and Oda. Juno: from Mrs. Gratrix.

Odm. Doraq West Point var.; Odm. Eros magnificum; Cattleya Trevella; and Cypripedium nævium Perfection: from S. Gratrix, Esq.

Cypripedium bellatulum var. Gay: from Dr. F. T. Paul.

Oncidium Gardneri Haddon House var.: from P. Smith, Esq.

CULTURAL CERTIFICATES—FIRST-CLASS.

Mr. J. Howes, for Cattleya Harold var. Mont Blanc.

Mr. E. W. Thompson, for Oda. Coronation var. delicata.

Mr. Thurgood, for Bulbophyllum macrobulbum.

THE ORCHID REVIEW.

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NOTES.

SPECIMEN CYMBIDIUMS.—Mr. Arthur Yates, of Sydney, Australia, is fortunate in being able to grow Cymbidiums in the open air. C. Lowianum and C. eburneo-Lowianum are represented by specimens measuring six feet across. They are grown in tubs, and produce their many flowered spikes in September. Mr. Yates has also been successful in raising a fine lot of Cypripediums.

REMINISCENCES OF THE PAST.—Possibly few amateurs have taken so keen an interest in Orchids as Mr. de Barri Crawshay, of Rosefield, Sevenoaks, and so far as Odontoglossums are concerned his knowledge and records of the genus have probably never been equalled. Much of this valuable information, the result of many years' work, is kindly contributed by him in an article entitled, "Reminiscences of my Orchidic Life," the first part of which appears in the present issue. Mr. Crawshay sold his collection in October, 1919, but retained a few pet plants so as to keep somewhat in touch with Orchids. Pressure of other matters has prevented him keeping up to date in Orchidic circles, nevertheless he has the repute of being a veteran among amateurs, and even now may know plants that most of the modern growers have never heard of.

PHAIUS.—The name of this genus is derived from the Greek word for swarthy, in reference to the prevailing yellow-brown tints of the flowers. The plants should be repotted in the spring when commencing their new growth in a compost of fibrous loam, and a small quantity of rough peat, or other fibre, and sphagnum moss. Drainage to about one-half the depth of the pot should be secured by means of broken crocks. Liberal and frequent waterings must be given during the season of active growth, and occasionally a little weak manure water may be used, but during the season of rest only sufficient water should be given to keep the compost moist. The temperature of the intermediate house is sufficient, that is to say, a range of about 55-70 degrees by fire heat, according to the season of the

year. The plants should not be exposed to direct sunlight during the summer months; it is not unusual to place them in a shady position in the East India house during active growth, or even in an ordinary stove.—*Veitch's Manual of Orchidaceous Plants.*

ARACHNANTHE LOWII.

THE principal attraction at the Royal Horticultural Society's meeting, held on September 5th, was a remarkable specimen of Arachnanthe Lowii, exhibited by Sir Jeremiah Colman, Bart. It consisted of three strong stems, well provided with large leaves, and carried eight long spikes with a total of 160 flowers. A Silver Gilt Lindley Medal was awarded to Mr. Collier for his skill in cultivating this rarely seen plant. It had been grown in a house along with Dendrobiums of the North Australian section, the temperatnre during winter rarely going below 60 degrees, and in summer rising to 95 degrees, but always protected by heavy shading.

This Bornean Orchid was originally discovered by Sir Hugh Low about the year 1845, when he sent it to his father at the Clapton Nursery with the request that it might be called Vanda Lindleyana, in compliment to the most distinguished orchidologist of that time. Dr. Lindley, however, declined the honour, and adopted the name of the discoverer, "who certainly ought, before all others, to be associated with one of the finest which he has discovered in Borneo." In 1881 it was transferred by Bentham to Arachnanthe, although Messrs. Veitch subsequently remarked, "it possesses characters so distinct from every known Orchid that it may well be doubted whether its relegation to Arachnanthe by Bentham is destined to be final." In 1911 this species became Vandopsis Lowii, Schlechter, and in 1919 its name was once again changed, on this occasion to Dimorphorcis Lowii, "which expresses its remarkable habit of producing flowers of two separate kinds, as shown in the annexed photograph." (*Orch. Review xxvii.*, p. 149).

Another illustration of the two kinds of flowers appears on page 171 of the current volume. It should be mentioned that the long spikes are pendulous, so that the upper flower figured represents one of those, usually about three in number, that are formed at the base of the spike; they are tawny yellow with a few small brown dots. The remaining flowers, often twenty or more in number, have a narrower, undulate shape, and are blotched with chocolate-brown on a light yellow ground. This remarkable difference is usually strongly defined, but in the specimen recently exhibited by Sir Jeremiah Colman there were several flowers showing intermediate characters, the individual segments being composed of both kinds of flowers. The cause of these dimorphic flowers remains still unsolved.

CYPRIPEDIUMS—THE LONG-PETALLED SECTION.

By HAROLD RAVEN, The Croft, Ruddington, Notts.

IN dealing with this curious and interesting section it is difficult to know exactly where one should begin and end, for my title might quite easily be taken as covering, in addition to Cypripediums proper, the longer petalled Selenipediums such as caudatum and caricinum. Since, however, it is my intention to deal fully with the Selenipedium section in a future article on the genus, I shall limit myself in this solely to the long-petalled species that may be truly considered Cypripediums.

The foundation of the section was laid in 1860 by the discovery of C. Stonei by Sir Hugh Low when collecting in Borneo. This fine species, for many years the rarest of plants, first flowered in the famous collection of John Day, of Tottenham, by whom it was named in compliment to Mr. Stone, his Orchid grower; to Mr. Day also belongs the honour of being the first to flower that fine and much-coveted variety C. Stonei platytænium. C. Sanderianum was introduced by Messrs. Sander, in 1885, having been discovered by Forstermann when collecting in the Malay Archipelago; and was followed in 1888 by C. Rothschildianum, another introduction of the St. Albans firm.

In habit they are similiar, all being moderately tall, with glossy green leaves and bearing two to four flowered scapes. With the exception of C. Stonei, which produces its curious scapes in early autumn, they are all summer flowering. Culturally they are not at all difficult to please, and if potted in a compost of fibrous loam, osmunda fibre and sphagnum moss, cut moderately fine and mixed with a few small crocks or pieces of brick, and given a fairly shaded position at the warm end of the Stove or East Indian house where they may receive abundant supplies of water, both at the root and in the atmosphere the whole year round, they will be found to flourish and flower freely. One word of caution on watering is necessary, this is that on no account should water be allowed to lodge in the centre of the growths, for they are particularly susceptible to damping and decay. In deciding the most suitable position for them it is advisible to remember that they are all natives of tropically humid jungle country, and while it is important to avoid anything approaching a stagnant atmosphere, it is better to err on the side of humidity and closeness, at any rate towards mid-day, with a perceptibly cool and thus more buoyant feeling towards nightfall.

It is a matter for surprise that the section has not appealed more to the hybridist, for apart from the question of stamina there is the length of petal, the fine erect habit, the bright colouring; all of which attributes would materially improve and extend the section if used with suitable species. I must confess to a great liking for them, to a desire of seeing them taken up

and improved in this way; the long petals and vigorous habit of the plants give them a much greater fascination for me than the more commercial hybrids as exemplified by those of the Thalia type. There is ample scope for the formation of a really fine race of hybrids in these species, which have already given good results as parents; and I for one should be extremely glad to find both species and hybrids more generally known.

The most important hybrids are:

Of C. Sanderianum: Sanderiano-superbiens, Princess May, Cassandra, Miss Fanny Wilson, Ultor.

Of C. Stonei: Numa, Morganiæ, Mdme. Georges Truffaut, Edith Winn, Fordianum, Doris, J. H. Veitch, Euryandrum, Alice.

Of C. Rothschildianum: Rolfei, Wiertzianum, Wm. Trelease, Kimballianum, Premier, Neptune, Massaianum, Mahleræ, Lord Derby, Shillianum, Daisy Barclay, Baron Komura.

CYPRIPEDIUM ROLFEI (BELLATULUM × ROTHSCHILDIANUM).

Award of Merit, R.H.S., Aug. 27th, 1901. Creamy-white colour, with deep brown markings on the sepals and petals, and rose-purple spotting on the lip.

REMINISCENCES OF MY ORCHIDIC LIFE.

By de Barri Crawshay, O.B.E.

FOR my Orchidic career I have to thank the great Botanic Gardens at Kew and a poisoned hand, as the following incident will show. In 1870 I did not know what an exotic Orchid was, although I had "discovered" and gathered many of the English species that are known popularly as the "Bee" and the "Fly," etc. It so chanced that, having a badly poisoned hand, one of my uncles, who was a doctor, carried me off to Richmond in order to stay with him and be cured. I used to go with him in a brougham on his round of visits, and knowing my love of gardening, he took me one day to spend an hour at Kew. We had a run through the houses, and on entering one that was very hot and saturated with moisture, I saw a row of sticks, apparently all dead and drooping, attached to wooden blocks that were suspended from the roof. My astonished eyes caused me to exclaim: "What are those things, uncle?" and on being informed that they were Orchids from South America, I replied: "When I am a man, uncle, I shall grow Orchids." To say those few words took perhaps ten seconds, but that short time has controlled forty years of my life. Those uncanny-looking plants and the way they were growing instantly proclaimed them to my boyish mind as different to anything else I had seen, and naturally I *wanted* them; such is human nature. After that day Kew was visited again, and by the time my hand was cured my boyish resolve had sunk in much deeper. I left my uncle's house knowing the names of several genera.

School days led me near several large gardens, and I always looked for the Orchids, and found them on blocks of wood and in all sorts of uncanny growth that to-day would grieve me sadly. During one of my "Holy Days" I had to carry out a commission for my father with a big nursery firm in London that has since become extinct. It came about in a curious way. The nurseryman had delivered a large order of plants to stock a winter garden built by my father. One very fine orange tree did not look well and caused the following remark: "That tree will be dead in three months." To which the dealer replied: "Not it; if it is I will give you £50 worth of plants." That orange tree *did* die, and I was sent to choose the plants. Here was my first chance to grow Orchids. But when I heard the staggering prices for plants in small pots my heart sank deeper than did formerly my resolution to grow them. Consequently I only chose Cypripedium barbatum and C. insigne. These two plants were grown for a couple of years and finally died, but it was my first step towards better things.

The next attempt was also at a big London nursery. A batch of Odontoglossum cirrhosum were just pushing their spikes, and without asking the price, two were ordered to be sent when the flowers were ready to open.

In due time a box arrived containing two poor plants of three to four bulbs with thin spikes; an inspection caused remarks not highly approving of their condition, but the examination of the invoice caused the instant return of these cirrhosums. My second step was a failure.

I now come to the third step, which was an important one, and led up to a long future. I built a curvilinear span-roofed house at Rosefield, Sevenoaks. It was mid-winter and the house was not nearly finished, but as catalogues had been ordered regularly from Mr. J. C. Stevens, I could not possibly wait after reading them for such a trifle as the house being finished. I had a good dry stone cellar with a north window and the gas laid on, and in it the plants could lodge awhile.

On December 23rd, 1880, I went to "Stevens' Rooms," and not knowing by sight aught but the two above-named Cypripediums, I bought something of all sorts, amounting to a total of 219 plants, at a cost of just under £48. I brought them home in triumph and put them all in the cellar, where they "grew" till the house was ready. I watered them carefully, and one—Lælia Schilleriana—actually partly opened a bud in the cheery gassy cellar. I daresay it was so thunderstruck at its surroundings that it could not help looking around, and it was so disappointed that it never did such a rash thing again. On December 31st, after eight days' cellarage, the plants were transferred to the newly-finished house. A little plant of Masdevallia tovarensis, "mirabile dictu," survived the cellarage and lived happily in Kent until the disposal of my collection.

My gardener at that time had never seen an Orchid before, and thinking that water was their one essential, he watered them at every opportunity. Many, of course, did not survive. This man thought he knew all about them in no time, but he left my service on April 16th, 1881. Sidney Cooke commenced with me on April 25th of the same year and remained till he died on January 1st, 1901. He gained his experience with Orchids in Mr. Brymer's collection at Ilsington House, Puddletown, Dorset, and also at Fetcham Park, Surrey.

My next big thing occurred on January 13th, 1881, at the Hooley House Sale, Coulsdon, Surrey. I sent an emissary "carte blanche," who bought freely, and the day he went to fetch the plants over the North Downs there was deep snow and twenty degrees of frost. The van became held up on the road and did not arrive until eleven o'clock at night, and as there was again twenty degrees of frost I was prepared to see the plants all dead, but good packing and luck saved them all, except a few of the smallest. Out of this lot I had my first stroke of good luck, as from half-a-dozen mixed unnamed Cattleyas I bloomed a lovely variety of C. Trianæ alba, which was figured as a coloured plate in *The Garden* of July 22nd, 1882, Mr. O'Brien stating "it is one of the loveliest and most attractive varieties we have

ever seen." New buyers were then carefully nursed, and I recall a letter from Mr. J. C. Stevens announcing the fact that the celebrated John Day collection was coming up for sale, and suggesting that I keep a few open spaces for it.

On February 7th and 21st, 1881, I bought my first two Odontoglossum Alexandras, as they then were called, for 21s. and 25s. They were bad varieties, like all others of similar name. I kept those plants until the disposal of my collection in October, 1919. From an importation of Anguloa Ruckeri I purchased a big plant for ten shillings, and on taking it to the Royal Horticultural Society in June, 1844, I gained my first First-class Certificate, the plant being recorded as A. Ruckeri sanguinea.

During February, 1882, I commenced buying imported plants of Odontoglossum crispum in small quantities, and in May of the following year I bloomed my first spotted one—a fair variety of O. crispum Trianæ. This name, I may mention, denotes a section in which the spotting is confined to a few spots on each of the three sepals. Looking over my collection catalogue No. I, it is astonishing to see the variety of plants, from Ada to *Zygopetalum*, that were all grown in two houses; a second one having arisen with three divisions for various temperatures. At this period Lælia anceps began to appear in some quantity. It became a favourite of mine, and I wished in after years that I had kept many of my early ones.

On July 11th, 1881, I had my first revel among an importation. I bought 152 plants of Cattleya Mossiæ from Mr. William Bull. They had all been specially picked out by him to keep, and had been placed in a private shed with a few more large plants. When they were in bloom, Mr. John Dominy said he had never seen such grand varieties in quantity in any importation before. I would like to say that Mr. Bull was one of the two Orchid lovers who offered to help the tyro the first day I appeared at Stevens' Rooms, the other was the Rev. J. B. Norman, and both gave me many a valuable wrinkle. At the Allan Edwards' sale at Stevens' Rooms in April, 1882, I picked up a little unbloomed Mexican Lælia. In the following December it flowered, and seeing that it was peculiar I sent it to Professor Reichenbach, who named it Lælia Crawshayana. That was a proud day for me when I had mastered his almost impossible caligraphy naming it after the tyro.

On July 31, 1882, my first direct importation arrived from British Guiana. It was sent by my brother-in-law, Dr. C. G. Young, sometime Mayor of Georgetown. Some big masses of Epidendrum fragrans were the chief things in the case, but as they came "direct," the event gave me great pleasure. In 1883 a fine case of Cattleya superba came from the same source. In those early days I bought several plants in bloom, *heavily disbudded*, and "much smaller" was the note that I made when they

bloomed again, which recalls the fact that disbudding was not an unknown trap for the tyro even in those early days.

On February 5th, 1883, Odontoglossum Alexandræ in bulk began. I went to Colchester to the New Plant and Bulb Co., owned by Dr. Wallace, and managed by Mr. Fred. Horsman, senr., and returned the happy possessor of 533 imported plants. These proved the greatest weeds I ever saw, and among them was not one which to-day, if we saw it lying in a rubbish heap, we should rescue from that ignominious position. In those days the Pacho district had not been much explored, though a Mr. O'Reilly had sent over a few that evidently came from that district, as later years proved. Fusagasuga, to the south of Bogota, was the gathering area, and my contemporaries of that period well know what rubbish most of these crispums were.

Mr. Sander had collectors in Colombia who had sent him some crispums from the new district, which proved to be "Pacho," as on February 9th and 16th, 1882, I bought my first few Pachos, as we soon afterwards called them, at his sales. It was not till about 1890 that the specific name crispum completely superseded Alexandræ. A reference to *Reichenbachia*, 1888, pl. I., will show that the text is headed Odontoglossum crispum, Lindley, Alexandræ, Bateman. I remember Mr. Sander telling me soon after I had bought the 533 Fusagasuga plants that I had the wrong type. On June 18th, 1884, I had my first big lot of Pachos. Mr. Sander and I selected 50 plants from the stock at St. Albans, and finally I was presented with a plant in bloom of the 1883 importation that was worth ten guineas. From then onwards Mr. Sander imported enormous quantities of the Pacho type. Mr. John Carder was also collecting great quantities for Shuttleworth, Carder & Co.

During 1886 Pacho crispums came over by tens of thousands. The sales at Messrs. Protheroe & Morris's Rooms, as well as at Mr. J. C. Stevens', were most animated scenes, buyers being numerous and eager. The character of bulb, likeness and peculiarity, was a deep study to get the lucky blotched crispum, and eager was the quest to acquire the likely looking plant. This was the year that the crispum boom began in earnest, though a few fine blotched forms had previously been acquired by Baron Schröder, among which were the varieties Veitchianum for 100 guineas in 1884, and Baroness Schröder for a similar figure in 1886.

On April 19th, 1886, at Messrs. Protheroe & Morris's Rooms, Mr. Sander offered a grand blotched form in bloom, which was purchased by Baron Schröder for 160 guineas. This staggered the Orchidists of that day. The plant became O. crispum apiatum, and for many years was the acme of crispums. It was awarded a Gold Medal at the Royal Horticultural Society on March 13th, 1894. On June 6th, 1886, at the same auction

rooms, Mr. W. Cobb offered another grand blotched form which fell to Sir Trevor Lawrence for 150 guineas. It became O. crispum Burford variety, but died in 1898, or the following year. The dearest Odontoglossum in 1886 was Mr. Knox's "yellow Pescatorei," put up at Stevens' Rooms on April 14th, 1886, and purchased by Baron Schröder for 168 guineas. This was, of course, O. excellens, but in those early days, and for a long time after, a hybrid in a state of Nature was a nightmare to many, so they were all called species.

Before the cult of the blotched crispum began seriously, some unspotted Pacho forms realised high values, one of the best being "The Duchess," shown at the Royal Horticultural Society by the Duke of Sutherland on November 14th, 1882, when it received a First-class Certificate. On November 16th, 1882, half this plant was bought by Sir Trevor Lawrence at Stevens' Rooms for 40 guineas. Sir Trevor's plant died, and it is a regrettable thing that one of the early and finest of unspotted forms is not now extant to compare with the renowned varieties of to-day.

The great furore in blotched crispums may be considered to have begun when the variety Luciani was purchased in 1897 by Mr. A. Warburton, who showed a four-flowered spike at the Royal Horticultural Society on June 10th, 1902. It was in very fine form and lifted the variety into high renown, plants changing hands at £500 and upwards. O. crispum Pittianum, which was bloomed by Mr. T. Rochford and sold to Mr. H. T. Pitt, was exhibited by the latter well-known amateur at the Royal Horticultural Society on May 5th, 1900. This also leapt rapidly into fame and realised the highest price paid for a crispum, or any Orchid, at auction, viz., 1150 guineas, being purchased by Baron Schröder in person, and creating a scene of eclat never equalled since Mr. H. T. Pitt's sale of duplicates on that 22nd day of March, 1906.

O. crispum F. K. Sander is another variety which made a well-known name. It was shown by Mr. Sander at the Temple Show, May 26th, 1903, and purchased at an extremely high price by Mr. H. T. Pitt, who subsequently sold one small bulb two inches high with a four inch lead for 800 guineas. This occurred on March 22nd, 1906, the purchaser being Mr. Warburton. O. crispum Cooksoniæ created a romantic history as well as a very high value. Strange to say, it ought to have fallen to my lot to have flowered it. On June 26th, 1900, I was selecting crispums from an importation at the late Mr. H. A. Tracy's Twickenham nursery, and passed this plant through my hands five or six times, but discarded it on account of its bad shape for potting and its blackish "gloriosumish" appearance. The foreman in charge of the importation kept the plant, as he felt I fancied it very much. It bloomed in due time, and some of the flowers were worn by a lady at a dance and where they attracted the notice of a connoisseur.

The plant was acquired by Mr. Norman C. Cookson, who showed it at the Royal Horticultural Society on February 10th, 1903, and refused an offer of £1,500 from the same amateur who discarded it at ten shillings. On May 31st, 1904, at Mr. Cookson's sale, two bulbs were bought by Mr. F. Peeters for 640 guineas.

O. crispum Graireanum, which became a password among crispums, was acquired by Mr. N. C. Cookson, who sold two bulbs and a lead at his sale of duplicates, May 29th, 1906, for 900 guineas. This variety is one of the almost solid coloured forms that are a "self," with a narrow white margin. It had also a most peculiar sheen of other colour running through it and extremely like some of the shades seen in present-day hybrids. O. crispum Franz Masereel was one of the great crispums. The spike was sent to the Royal Horticultural Society, November 13th, 1894, and received a First-class Certificate. Its wonderful colour, which almost covered the whole flower, was at that time an eye-opener. M. Jules Hye de Crom bought it for £480. Later on, Mr. Norman C. Cookson acquired the majority of the stock, and in his sale of duplicates on May 31st, 1904, a plant of one bulb and two small leads fell to Mr. Warburton for 570 guineas. O. crispum Leonard Perfect became a crispum of great renown. It was bloomed by Mr. R. Brooman-White, and purchased by Mr. Sander, who showed it at the Temple Show, May 29th, 1906. It was subsequently purchased by the Earl of Tankerville and Mr. N. C. Cookson in parts. On March 12th, 1907, a plant was "knocked down" at Messrs. Protheroe & Morris's Rooms for 700 guineas.

It was over a period of twenty years that crispums reigned supreme in values, from apiatum's day of April 19th, 1886, to Pittianum's day of March 22nd, 1906. Baron Schröder purchased both plants on these days at 160 and 1,150 guineas respectively. There was no one who took a keener interest in and who had a greater love for blotched crispums than he. The Odontoglossums at The Dell were always being added to, and the list of fine varieties then was a very long one indeed. The Temple Show week sales of 1906 were the end of the great crispum boom. On March 12th, 1907, the Earl of Tankerville had a sale of duplicates at which it was evident that the hybridist had shown he had learnt how to raise blotched crispums at last, for there was a heavy reduction in values all round. The Temple week of the following year further proved this, for a plant of O. crispum Fearnley Sander in Mr. Cookson's sale on May 28th, 1907, was purchased for 160 guineas. It carried a spike of three splendid blooms. Mr. Cookson had bought the plant at the Temple Show, 1906, at an enormous price.

How many collectors were sorry I do not know, but the great majority were very pleased to see a prospect of owning some of these much coveted plants. To-day the great mass of blotched crispums are within the power

of an enormous number of collectors who formerly could not contemplate their purchase. I knew one collector who simply longed to own a fine crispum. He had a chance one day at £30 for a plant in bloom. While he was considering some one offered £40 and eclipsed him, and before the bloom was cut £80 had been paid for the plant. Afterwards, when the plant had been propagated, he bought a piece at £50, and fearing to hold such an expensive plant he put it up by auction the following year when in bloom and obtained £126. He did well even by losing the original plant, but would have done better had he not considered at first.

To recount all the crispum stories I know would fill a book of bulky proportions, but these few notes on their boom will tell the collector of recent date what exciting days those were in the end of the nineteenth and beginning of the present century. To-day, owing to everyone being able to own blotched crispums, there is a steady gradual return to the unspotted varieties, of which we had thousands during the period of 1880 to 1895. Scores of these fine ones were killed by lack of skill, and not cutting the spikes soon enough; also by non-propagation, for cutting a plant made many shudder and think it would kill it instantly, but a few of us began cutting off the leading bulbs, instead of the worn out and oldest one, which often died, for we kept them in wet moss, too wet, then, and killed them. Ultimately, we revolutionised the art of propagating Odontoglossums.

(To be continued.)

CYPRIPEDIUM CURTISII.

WHEN, in 1878, Messrs. Veitch decided to send a plant collector to the East, Charles Curtis, who had been in their employ some four years at Chelsea, was selected to undertake the journey. The first trip was to Mauritius and Madagascar, where he collected various tropical plants. He returned to England in 1879, and the following year was sent to Malaysia, where he explored Borneo, Sumatra, Java and the Moluccas. His special object, and one in which he was successful, was to collect specimens of Nepenthes Northiana. Curtis was accompanied on his trip to Borneo by the young gardener, David Burke, who returned with the plants found in Sarawak, these including a large quantity of Cypripedium Stonei, C. Lowii, and many Vandas. After seeing Burke and the collection safely off at Singapore, Curtis proceeded to Dutch Borneo in order to collect Phalænopsis violacea, which, although known in England, was still very rare. He was successful in obtaining the plants, but owing to an accident with a boat, a month's collections and all his clothes and instruments were lost, and he narrowly escaped with his life.

Among the discoveries of Curtis was the handsome Cypripedium to

which his name was subsequently attached. The plants were sent home from Sumatra in 1882. It was discovered at some distance from Padang, at an elevation of 3,000-4,000 feet, on the great mountain range that stretches through the entire length of the island. It is closely related to C. superbiens and C. ciliolare, perhaps nearest to the latter. The accompanying illustration is of a fine specimen grown in the collection of Dr. Miles Johnson. It shows fourteen flowers on a plant growing in a six-

CYPRIPEDIUM CURTISII.

inch pot. The leaves are tesselated above with deep and pale green. The upper sepal of the flower is somewhat small in proportion to the other segments, the large helmet-shaped lip is dull brownish-purple. The staminode is broadly horseshoe-shaped, with a deep notch on the basil side, and three small teeth between the pointed arms.

Cypripedium Curtisii has been much used in the production of hybrids,

one of the earliest being C. Cymatodes, also known as C. beechense. It received its former, and therefore correct, name from Mr. R. H. Measures, in 1893. The pollen parent being the closely allied C. superbiens. The accompanying block shows a remarkable three-flowered scape that appeared some years ago in the collection of Mr. S. C. Lutwyche, of Beckenham. Twin-flowered scapes on plants, or hybrids from them, that normally produce but one flower are seldom seen, and three flowers on the same spike is a very rare event. The cause is undoubtedly excessive vigour on the part of the plant, probably brought about by good cultivation.

CYPRIPEDIUM CYMATODES (Curtisii × superbiens).

Cypripedium Curtisii Sanderæ was exhibited by Messrs. Sanders at the Royal Horticultural Society, June 8th, 1915, and received a First-class Certificate. It constitutes the albino form of the species, the absence of the purple colour resulting in a greenish flower. The foliage is also devoid of purple tints, and thus lead to the plant being picked out and put on one side several years before it flowered. This albino nature is perpetuated in its hybrids, proof of which can be seen in C. Emerald (Curtisii Sanderæ × Maudiæ).

THE CLAYGATE LODGE COLLECTION, SURREY.

MANY very beautiful Cattleyas and Odontoglossums are to be seen in the garden of J. J. Bolton, Esq., at Claygate Lodge, Claygate, Surrey, one of the picturesque spots of this favourite county. This collection was commenced in 1910 at Pendleton, Lancashire, and was brought to its present site in April, 1921, when Mr. Bolton came south to enjoy a more genial atmosphere.

A large and lofty conservatory forms a connecting link to the two principal houses, and on the side of a high brick wall facing south a representative collection of Dendrobiums is cultivated. The plants are in ordinary pots, suspended in rows by wire supports, and are giving every satisfaction. About two dozen fine examples of D. Phalænopsis Schroederianum are along the upper rows, and the splendid bulbs which they have made during the past season is good evidence that the situation suits this North Australian species. The spikes are carrying numerous flowers and buds, and among the varieties is a pretty pink tinted one. A closely allied plant from the same locality is seen in D. superbiens, which has bulbs taller and thicker than the preceding. Another good species is D. crassinode, so named on account of its thick knotted bulbs. A large plant of D. Falconeri, with long slender stems, flowered well last season. There are two excellent specimens of D. Griffithianum, a rare species of the densiflorum section, with thick leathery leaves, and producing clusters of bright yellow flowers. Another interesting plant is D. Dalhousieanum luteum (A.M., R.H.S.) with flowers of sulphur-yellow colour. Among the specially fine hybrids are D. Austinii, D. Othello, the elegant D. nobile Hardyana, and last, but not least, about a dozen vigorous specimens of D. Thwaitesiæ, Veitch's variety, which is noted for its golden yellow colour.

The Cattleya house is span-roofed, about 14 feet wide, and has six rows of four inch hot-water pipes on each side. By this means a suitable temperature is maintained without keeping the pipes too hot. It must be said that the remarkably healthy condition of all the plants is abundant proof that the atmosphere is to their liking. This house contains some of the finest hybrids that have been produced, and at the time these notes were taken, many were in full flower, and had recently been exhibited at the Royal Horticultural Society and awarded a Silver Flora Medal. Several elegant forms of Cattleya Hardyana alba, with white sepals and petals and a bright purple lip make a very bright appearance, and are a pleasing contrast to the ordinary variety of this popular hybrid, while in C. Eleanore a further advance has been made by crossing Hardyana with Warscewiczii "F. M. Beyrodt," one of its parents. A richly coloured flower exists in C. Abekeniæ (Dowiana × Lord Rothschild), and one of

model shape in C. Clotho var. Leeana, which has for its parents C. Enid and C. Trianæ.

When Cattleya Hentschelii made its appearance in 1919, it was evident that the crossing of Dupreana with Warscewiczii was a successful combination, and would lead to further fine hybrids being seen. In the Claygate Lodge collection, this hybrid is represented by a specially fine variety called The Premier. C. Enid and C. Octave Doin are both hybrids of recognised merit, and when crossed they yield the beautiful C. Tityus, a hybrid which is well represented here by a very brightly coloured variety named Osiris, and by another called Imperator. Probably the finest of all the Cattleyas is C. Corydon (armainvilli-rensis × Trianæ), which bears flowers nine inches across, with segments of perfect formation, of a rich rosy-mauve colour in the sepals and petals, and the labellum ruby-crimson. It created quite a sensation when exhibited at the Royal Horticultural Society, May 9th, 1922. The popular C. Portia is well represented, and C. Venus, which is generally a difficult subject to cultivate, grows here with astonishing vigour. Many of the Cattleyas have made a couple of growths during the past season, and a notable example of this excellent culture is to be seen in C. Falco. A superb Cattleya is to be seen in C. King George, which received a First-class Certificate when first seen at the Royal Horticultural Society in September, 1915. Its parentage is aurea × triumphans (aurea × Rex), and the flower is a beautiful one, being clear nankeen yellow in the sepals and petals, and with a ruby-crimson labellum veined all over with yellow. Among the species is the handsome C. Warscewiczii Boltonii, C. Trianæ var., Edgar Knight, and selected varieties of C. Mendelii.

Lælia purpurata has been the parent of several handsome hybrids, and in few cases have its characters been better utilised than in Læliocattleya callistoglossa, which is well represented in this collection. In Lc. Athene (Lc. callistoglossa × Lc. St. Gothard) there exists a meritorious hybrid possessing a remarkable constitution, and in Lc. Serbia majestica (C. Enid × Lc. St. Gothard) there is another free-growing hybrid which produced a spike of five very large flowers of dark colour. Lc. Ivernia and Lc. Feronia magnifica (C. Enid × Lc. Haroldiana) are also worthy of inclusion in the list of choice varieties to be seen in this promising collection. Of all the numerous hybrids in this section few have given such fine results as Lc. Schroderæ, produced by crossing C. Maggie Raphael alba with Lc. Bella alba; in the variety Victrix, which has recently flowered in this house, the cream-white sepals and petals considerably enhance the richness of the purple coloured labellum. Of late years several elegant hybrids have been seen with Lælia pumila contained in the parentage. This Lælia produces its flower spike without any protecting sheath, and it is always a matter of interest to note in what degree this well-known

character is inherited in the offspring. One of the best of the L. pumila hybrids is Lc. Momus, represented here by a grand variety with broad flatly formed petals, and of free flowering constitution.

During recent years considerable interest has been taken in the production of yellow flowers, and among the finest results in this section is Læliocattleya Appam (C. aurea × Lc. Scylla), represented in Mr. Bolton's collection by a very beautiful variety in which the rich golden yellow sepals and petals are tinged with a bright reddish hue derived from Lælia cinnabarina; the dark crimson labellum being an additional point of elegance. Another remarkable and even finer result exists in Lc. Carmencita, Claygate Lodge variety (C. aurea × Lc. luminosa). In this the sepals and petals are of a golden-citron yellow colour, and the prettily formed labellum ruby-crimson. It was unanimously granted an Award of Merit when exhibited at the Royal Horticultural Society on September 5th.

About a dozen plants of Sophronitis grandiflora make a pleasing change of colour, and although much appreciated on this account, the more important part which this little plant has played is seen in the various hybrids, such as Sophrocattleya Thwaitesii (S. grandiflora × C. Mendelii), which is cultivated in a shallow pan, and in Sc. His Majesty (C. Trianæ × Slc. Marathon). As evidence of the vigorous condition to be seen in these plants, mention may be made of Slc. Niobe, which after flowering in September last year started into growth again and produced additional flowers at the end of March, and not content with this, it formed yet another bulb during the present autumn, and would have carried flowers had the buds not been picked out to preserve its stamina, although the appearance of the plant was in every way satisfactory. A very similar example occurred this year in a plant of Sl. Felicia. Another very free flowering plant in this collection is Renanthera Imschootiana, with many blooms of reddish colour, while Vanda Kimballiana and Lælia Gouldiana appear to be equally satisfied with the atmospheric conditions.

Brassavola Digbyana has yielded a handsome race of hybrids, and although the chief attraction lies in the large size of the prettily fringed labellum, the colour is generally below the average. A few exceptions have from time to time appeared, and it is these that are so much prized by amateurs. Among them is Brassocattlælia Jupiter var. John Cowan, with flowers over ten inches across, and Blc. Joiceyi majestica, a remarkable hybrid between Blc. Cooksonii × Lc. Thyone. There is a very fine variety of Brassocattleya Queen Elizabeth growing strongly, and also of Bc. Cliftonii magnifica. Before leaving this house we notice an excellent variety of Cattleya Warscewiczii, which fortunately belongs to the free-flowering type.

The Odontoglossum house is also span-roofed, and, like the Cattleya

house, is situated so that one side receives the sun in the morning and the other in the afternoon. It is twelve feet wide and about fifty feet in length, and has three rows of hot-water piping on each side. The desired temperature is thus easily maintained by not over-heating the pipes, and, as a further precaution, porous tiles, which are kept damp, are above them in order to prevent any direct current of dry air from reaching the plants. No Odontoglossum house is considered complete without fine varieties of the ever-popular O. crispum. Here are two of the very finest: one named Renown, with pure-white flowers, the other, called The Chairman, with blush tinted segments, but both of excellent form.

A number of the best hybrids are represented by paintings, and by this means their various meritorious points can be seen at any period of the year. O. Aireworth magnificum is very effective, the round segments being rose tinted and blotched with purple. In O. Carola var. Sunrise (Queen Alexandra × Scottianum), the flowers are golden yellow with reddish spotting. In O. Eximillus the reddish blotching is on a whitish ground, and in a very fine variety of O. eximium called Daphne the blotching is bright purple on a blush tinted ground. Very much of the attractive nature of an Odontoglossum is due to the arrangement of the spotting. There is in this house a strong plant of O. Empire, the flowers of which are clear white, but with just a few little spots of bright violet colour. The effect is in this case simply charming. The brightness of the violet on the clear ground being most pleasing. If we look for the origin of these spots and their peculiarly rare colour it can be traced back to the influence of O. Pescatorei, which is contained in the parentage.

Among the purple coloured flowers fine results are to be seen in O. President Poincaré, of rich plum-purple, and in O. Purple Queen, while in O. Nysa there exists a flower of reddish colour obtained through the use of the little Hunnewellianum species. An elegant hybrid producing flowers of brownish-purple colour can be seen in O. Fabia. Odontoglossum species are not grown so plentifully as in former days, but there is always a certain amount of interest attached to them. In this house is a plant of the rare O. Harryanum nigrum, which although small, will no doubt improve rapidly under the present suitable surroundings and treatment.

Odontoglossum Faustina, Claygate Lodge variety, was exhibited at the Chelsea Show of the current year, and was unanimously awarded a First-class Certificate. The spike then carried six finely developed flowers, all the segments being of excellent formation, rose tinted, and blotched with reddish-purple. Another excellent hybrid is to be seen in Odontioda Colinge, the segments of which are solid vermilion red, except for a narrow white margin which accentuates the intense coloration. There is a wide range of Odontiodas, including the very fine Oda. magna rubra, some fine

varieties of Oda. Bradshawiæ, and the beautifully marked Oda. Lutetia (C. Noezliana × O. luteopurpureum). Oda. Joiceyi, one of the best results of crossing Oda. Coronation with O. promerens, flowers freely from a well-cultivated plant.

There is probably no flower so beautiful and useful for decorative work as Odontoglossum crispum, and the pure-white varieties, as well as the yellow spotted ones, always meet with much appreciation. O. crispum xanthotes is represented by a choice variety distinguished by the name Perfect Gem, and there are others not far behind in competitive points. The well known and elegant hybrid called O. eximium has here a representative called Leonara; it received an Award of Merit at the Chelsea Show, 1919, and produces handsome flowers with brilliant ruby-red blotching.

During the last few years the importance of this collection has increased considerable, and the near future will show that it contains many hybrids of exceptional beauty. All the plants, which comprise specimens as well as numerous propagated pieces, are making rapid headway, and much credit is due to their able cultivator, Mr. S. Lyne, who gained part of his knowledge on Orchids when attending to the collection of Mr. J. Gurney Fowler.

CYPRIPEDIUM ACAULE.—The following is taken from "Bog Trotting for Orchids," by G. G. Niles: "On June 10th I ventured through the Glen of Comus to see the colony of the two hundred Moccasins. An albino—a pure white flower of Cypripedium acaule—was found recently by a lad in the district. He reports that he collected it amid a group of thirteen pink Moccasin flowers, apparently the only pale one of the sisters. Upon close examination of the structural parts of the albino, I observed that the left anther had not developed at all. It appeared blasted in embryo, and now looked like a brown smeared spot. The sepals and lateral petals were of a rich chrome yellow. The dainty labellum was pure white, of a pearl-like texture in the veining, and tinged with chrome on the crest of the moccasin. It was indeed a strange, beautiful flower. I had always supposed that an albino of any species of Orchid was pure white throughout its parts, and was therefore surprised to find the sepals and side petals yellow. Albinos of this species have been collected in this district for four seasons. A colony, found near the schoolhouse, produced six white blossoms. The children, calling them faded Pink Moccasins, believed them to have lost their colour after maturing. It appears from its persistence that the variety is permanent, and not the freak of a season. The abnormal anther may be present in all albinos. If so, it is evident that evolution is taking place in the pink Moccasin flower through the suppression of one anther in the genus Cypripedium, which possesses two, while all the other genera of the family have but one anther."

THE ORCHID FLORA OF PERU.

UNDER the title "Die Orchideenfloren der südamerikanischen Kordillerenstaaten," Dr. R. Schlechter is making a valuable addition to the literature on Orchids. Part IV. of this important work is devoted to Peru. In the preface the author says that the Cordilleran States of South America have always been considered the richest in Orchids in the whole world, but up to the present it has not been possible to make a comparison with other regions, nor has any attempt yet been made to survey the Orchids of the individual States.

Peru, next to Bolivia, the largest of the Cordilleran States, comprises the coast *z*one, the mountain *z*one and the forest *z*one, the whole being divided into twenty departments. Dr. Schlechter has compiled much condensed information concerning the temperatures and rainfall at various altitudes during different seasons, together with much topographical information of given localities. The history of the botanical exploration of Peru has been well given by A. Weberbauer in "Die Pflanzenwelt der peruanischen Anden," consequently Dr. Schlechter confines himself to mentioning only those collectors who have particularly contributed to furthering our knowledge of the Orchid flora of that country.

Due acknowlement is given to the two Spanish botanists, H. Ruiz and J. Pavon, for our first knowledge of Peruvian Orchids. These explorers, in company with the French botanist, J. Bombey, landed at Callao in April, 1778. After collecting in the provinces of Lima and Chancay, they went further inland to Tarma and Jauja. Returning to Lima, they went to the Huanuco department and explored particularly well this region, together with the remoter districts of Cuchero and Chinchao. They then travelled over Lima to Chile, where in two years much rich booty was collected, but this, together with the result of their labours in Huanuco, went down with the homeward-bound ship off the Portugese coast. In the meantime, Ruiz and Pavon had returned to Peru, and had made Huanuco their base for further exploration. From here they visited both Pozuzo and Huancabamba, but a fire in their headquarters at Huanuco in August, 1785, destroyed the material of these *z*ealous collectors for the second time. In spite of these misfortunes they continued their explorations in Peru, returning to Europe from Callao in 1788. The results of their botanical travels in Peru are given in several important publications. No less than 65 new Orchids are described in their "Systema Floræ Peruvianæ et Chilensis," but the remark on pp. 249-250 of this work allows one to conclude that much more had been collected.

Dr. Schlechter continues by passing in rapid review the work of the collectors of Orchids in Peru, with dates, their journeyings where known,

and an evaluation of their contributions. Juan Tafalla, a pupil of Ruiz and Pavon, Th. Haenke, A. v. Humbolt and A. Bonpland, E. F. Pœppig, and F. J. F. Meyens. "Very important were the travels of the Englishman, A. Matthews, a gardener, who journeyed in Peru from 1833, until his death in November, 1841, at Chachapoyas, and who, despite frequent illnesses, sent considerable collections to Kew, out of which Lindley described a large number of new species. Matthews appears to have had a particular interest in Orchids, not only those with large flowers, but also the more inconspicuous species."

With reference to von Antonio Raimondi, Dr. Schlechter deplores the fact that the treasure brought together by this man from all parts of Peru from the year 1851 until his death in 1890, and which, according to Weberbauer, comprises a herbarium of 20,000 specimens, remains to this day unclassified. Of J. von Warscewicz, who was Inspector of the Cracow Botanic Gardens until his death in 1867, it is stated "there can be few collectors so often mentioned in the history of the exploration of the Orchid flora of the Andes." From the point of view of the work under review the value of the contributions of this great collector are lessened because no more detailed information of the respective habitats is given than "Peru."

Richard Pearce, who visited Peru for the firm of J. Veitch & Sons, in 1863, seems to have had little success with Orchids, and is chiefly known as being the first to introduce Phragmopedilum caricinum to Europe. The most famous German plant collector, Gustav Wallis, first visited Peru towards the end of 1864. Benedict Roezl, whose name is rightly associated with those of Wallis and Warscewicz, evidently visited Peru twice, in 1869 or 1870, and again in 1872 or 1873. The geologist, A. Stübel, collected during his travels in 1874 and 1877.

From 1870, until towards 1900, quite a series of collectors were sent to the Andes by European firms to collect living plants and seeds for cultivation in Europe. Many of them visited Peru, but in most cases neither their names nor the routes taken are known. It is remarked that to these circumstances is to be ascribed the reason that a strikingly high percentage of Peruvian Orchids can be given no definite region as their habitat. It was considered sufficient to state Peru and to regard a more precise locality as a business secret. Erich Bungeroth, who can claim a not small service in the exploration of the Orchid flora of Peru, is highly spoken of. He was an indefatigable collector and traveller, but seems to have been badly treated by the Belgium firm for whom he collected. He it was who re-discovered Cattleya labiata in 1890, and discovered Cattleya Rex in the same year.

With the arrival of A. Weberbauer, we learn that a new epoch begins in the history of the explanation of the Peruvian flora. Since 1901, he has explored the country from north to south, and from east to west, as well as

from the coast to the tops of the mountains. Dr. Schlechter has great praise for his work on the Plantworld of the Peruvian Andes (Die Pflanzenwelt der peruanischen Anden). Another collector who made a name for himself through the introduction of particularly beautiful plants from Peru was Louis Forget. Unfortunately no information has been obtained concerning the length of his stay in Peru, or by what route he travelled. There is, however, no doubt that he introduced numerous Orchids and other plants whose home is to be looked for on the eastern slopes of the Peruvian Andes.

In reading this German book on Orchids, written by a very efficient and painstaking botanist, one lingers over the names of the men who collected and endured, for this is the human part of it. To all who dip into Orchid literature these names will occur again and again, and compel our esteem. There has been romance, pathos and tragedy in Orchid collecting, and there has also been chicanery. We blush when reminded of the cheating of poor Bungeroth at a time when "in his letters he was expressing the hope that at last he would be returning to Europe, but he shared the fate of many Orchid collectors, and soon saw himself cheated out of the fruits of his efforts. He was informed that all his exportations had arrived dead, although his name was mentioned when his discoveries were put on the market." And our sympathy goes back to those two Spaniards who twice suffered disaster in losing their collections. Matthews, the gardener in delicate health, collected to the end. He lasted eight years. Surely his life was a tragedy. Louis Forget was a Frenchman, a Norman; who died in France in 1915. He was an ardent collector, and the call of the primeval forest got into his blood. On his periodical visits to Europe he became restless after the first few days and wanted to be back.

Dr. Schlechter, in giving a general survey of Peru, divides it into three characteristic zones, namely, Costa, Sierra and Montana. He contributes intimate glimpses of the vegetation found in each, the climatic conditions, and indicates the parts that are known to have been explored. He acknowledges his indebtedness to Weberbauer for much of this material. The conclusions he arrives at may be quoted: "What compels me to believe that we have yet to expect many new Orchids from Peru is the circumstance that an exceedingly large part of the country has never been trodden by a botanically-trained collector. It is the eastern slopes of the Andes that are especially rich in Orchids, and only in a few places have these been deeply searched. That immense eastern territory of Hylaea of the department Loreto, Cuzco and Puno are likewise for the botanist almost terra incognita. Here, however, the plants will not be so easily reached as in the mountains, as they will mostly remain hidden in the tops of the trees of the primeval forest. Here the collector will be called upon to search those places where

trees have been recently felled, or else himself cut down single trees to become the owner of otherwise unobtainable Orchids. The Brazilian orchidologist, Barbosa Rodriguez, relates that it was only in this way that he was able to discover his many novelties, and I myself in New Guinea, as well as in Africa and Malay, have often made my most interesting discoveries by felling such trees as are prolific in Orchids. The earnest observer will soon get to know the principal trees preferred by epiphytal Orchids."

A table is given showing the distribution of the Orchids over the twenty departments, and a summary of the table gives 111 genera containing 838 species, of which 747 are endemic. This is followed by a close analysis of the Orchids of Peru in relation to their distribution, and in which much that is interesting is brought out. It is much too condensed to review, and there is more than can be quoted. The author finishes this part of his work with the following appeal :—" From all the foregoing it is clear that there is still much to fulfil in the exploration of the flora of Peru, and especially the Orchid flora. I would therefore appeal to every plant lover who is staying there to take part in the exploration of this interesting land, and this he can easily do by collecting those plants that are in flower for herbarium purposes. For my part I promise that all Orchids thus sent me shall be determined quickly and the name of each forwarded to the sender. The more support we get in this way the sooner shall we be able to commence the exact Orchid flora of Peru."

The second part of the book, pp. 41-118, is taken up with descriptions in Latin of new species named by the author. Nearly all this new material has emanated from A. Weberbauer, from E. Koehler, the owner of a coffee plantation in Chanchamayo, and his two sons, from whom Dr. Schlechter has received parcels of dried plants, and from Dr. Serafim Filomeno, who gathered his plants in the neighbourhood of Moyobama and also sent drawings. There is a formidable list of 121 species, but I doubt if it contains much floral value; it must remain of scientific interest and value only. Probably most of the plants described will never be seen here alive, and will never be wanted outside of a botanic garden. It seems advisable to inform " Orchid Review " readers this, for fear they look round their own collections and find them comparatively poor. The third section is taken up with a list of all the known genera and species, with synonyms and references.

J. M. BLACK.

SALE OF THE ESLAFORDE COLLECTION.—An important notice in our advertisement pages refers to the Sale by Private Treaty of the Eslaforde Collection of valuable and rare Orchids formed by the late Dr. Fred. Bedford. Full particulars may be obtained from Messrs. A. J. Keeling & Sons, Westgate Hill, Bradford.

DISBUDDING OF ORCHIDS.

THERE are many occasions when amateurs obtain plants that are not in a condition to carry a full spike of flowers for any prolonged period. Quite naturally, there is on the part of the owner a strong desire in the case of newly acquired plants to ascertain their respective merits at the earliest possible date; and in thus encouraging them to come into flower prematurely detrimental effects are frequently produced. Hence the necessity of restricting the number of flowers by disbudding.

Among the plants that lend themselves easily to the process of disbudding are Odontoglossums, and others which produce their spikes without the protection of an enveloping sheath. Several weeks before the actual period of blooming, the individual buds can be detected and any desired number removed with but little difficulty. It is perhaps scarcely necessary to mention that it is the upper buds, with the portion of the spike supporting them, that are almost invariably removed when any disbudding is decided upon. The other method consists of removing a few of the lower buds, and thus leaving the actual spike in its natural condition. The former method has the disadvantage of causing the flowers to be produced on the stiff unbending part of the spike, and also in close proximity to the plant, whereas in the latter procedure of removing the lower buds, a prettier effect is given for the flowers are then seen on the more slender and generally arching portion of the spike. The practical result in either case is that larger flowers of fine quality are obtained, though fewer in number.

An immature seedling Odontoglossum flowering for the first time with an unrestricted spike of say five flowers, generally gives fair evidence of its future capabilities; in other words, it is possible to form a mental vision of what it will be like after two or three years careful cultivation. But if by removing most of the buds all the vigour of the plant is forced into the remaining few, then a very much earlier knowledge is obtained of its full capabilities. The meritorious qualities in what ever degree they are present are then plainly visible, and it is to such plants that the Royal Horticultural Society's Preliminary Certificate is awarded when opportunities arise.

In the same sense that a child is not expected to carry the load prepared for a man, an undeveloped plant should not bear as many flowers as one fully matured. The actual number of flowers should be in relation to the strength of the plant. Just how many should be carried is a point that frequently has to be decided by the R.H.S. Orchid Committee when making their awards. It sometimes happens that a fairly strong plant has been so severely disbudded that the remaining flowers are abnormally developed, and show finer qualities than they otherwise should do, or when growing under natural conditions. Bearing this point in mind, "Awards

will not be recommended to any plants, the natural size and character of the flowers of which have been, in the opinion of the Committee, in any way improved through disbudding or dressing."

With regard to Lælias and Cattleyas the conditions are somewhat different. The flower buds are considerably less in number, and in nearly every case are protected by a sheath until a short period before unfolding their segments. Plants of these and allied genera in a young state or immature condition are not free-flowering, and on that account the necessity of disbudding does not occur so frequently. When, however, the cultivator deems it necessary to safegard the health of the plant by preventing it from flowering, it is usual to remove the whole spike and the accompanying protecting sheath.

By the time the flower spike has prolonged itself beyond the sheath, the buds are so fully developed that the removal of any one or more of them can make but little difference to those remaining. The diminished spike of flowers certainly means less strain upon the plant, and in this respect there is a point worthy of consideration when valuable specimens are concerned. But if the actual size and qualities of the individual flowers are to be improved, then the removal of some of the buds must be effected several weeks in advance of the flowering period as in the case of Odontoglossums. A periodical examination of any plants that have made sheaths is necessary to ascertain the early formation of the flower buds. By passing the thumb and forefinger carefully down the outside of the sheath it is possible to ascertain by the thickening that occurs the precise position of the buds. Another method is to hold the plant up to a strong light, when the position and number of the buds can be determined by their shadow on the enveloping sheath. If any disbudding is decided upon, it should be done at the earliest opportunity by carefully removing the sheath, or a portion of it, and cutting off the undesired buds by a small and sharp knife. While some advocate the removal of the whole sheath for the purpose of disbubbing, others recommend taking off only the upper portion, but in this latter method a word of warning is necessary, for should water find its way into the cup-like structure thus formed and remain there during a period of colder weather, serious consequences, not only to the flower buds, but to the health of the whole plant will most probably occur.

With regard to Dendrobiums, in which the flowers are formed in clusters on the various nodes of the bulbs, it will be found most advantageous in those cases where disbudding is necessary, to remove one or more from each cluster, instead of removing all those from the upper portion of the bulb-like stems. It is the common practice when selecting a flower for the purpose of having a painting made to send the finest one to the artist. This method is so generally accepted by horticulturists as being tbe best

one under the circumstances that further comment is perhaps undesirable, but from a botanist's point of view a flower of medium size and quality would be more desirable as better representing the actual nature of the plant.

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR.
Cattleya Avalanche	C. Mary Sander × C. Snow Queen ...	Sanders.
Cattleya Bright Eyes	C. Prince John × C. Armstrongiæ ...	Armstrong & Brown.
Cattleya Courtrai	C. Lueddemaniana × C. Rex	Sanders.
Cattleya Jules Serrie	C. Warscewiczii × C. Dietrichiana ...	Sanders.
Cattleya Margaret	C. Maggie Raphael × C. Iris	Pantia Ralli, Esq.
Cattleya Orient	C. Adula × C. Venus	Armstrong & Brown.
Cattleya Shrewsbury	C. intertexta × C. Dusseldorfei	Sanders.
Cattleya White Lady	C. O'Brieniana × C. Percivaliana ...	Sanders.
Cypripedium Albion	C. niveum × C. Astarte	Stuart Low.
Læliocattleya Golden Glow	Lc. Sunrise × C. Venus	Baron Schroder.
Læliocattleya Ophil	Lc. Ophir × C. Sybil	Hassall.
Læliocattleya Osric	Lc. Oriens × C. Dowiana	Hassall.
Læliocattleya Praxiteles	Lc. Mrs. Phayre × C. Hardyana	Pantia Ralli, Esq.
Læliocattleya Queen Mary	Lc. Lustre × C. Peetersii	Sir Geo. Holford.
Læliocattleya Rubicon	Lc, Geo. Woodhams × C. Hardyana ...	Baron Schroder.
Læliocattleya Ruby King	Lc. Golden Wren × C. Hardyana ...	Armstrong & Brown.
Miltonia gattonensis	M. Bleuana × M. Charlesworthii	Sir J. Colman.
Odontoglossum luridum	O. Harryanum × O. Olympia	Charlesworth.
Odontoglossum Queen Astarte ...	O. Astarte × O. Queen of Gatton	Sir J. Colman.
Odontoglossum Topaz	O. regale × O. Lambeauianum	R. Gerrish, Esq.
Odontoglossum Yellow Prince ...	O. King George × O. Queen of Gatton ...	Sir J. Colman.
Phalænopsis Regnier	P. Lueddemanniana × P. Schilleriana ...	A. Regnier.
Sophrocattlælia Mac	Sc. Atreus × Lc. Maqueda	Stuart Low.

GOOD CULTIVATION.—Notwithstanding the lack of sunshine during the past summer, excellent results have been obtained in the cultivation of various Orchids in the collection of J. Frederick Phipp, Esq., of Devizes, Wilts. A photograph of plants that have recently flowered shows in the centre a robust example of Cattleya Harrisoniana with a spike of six flowers. On one side of it is the Knowle variety of C. Hardyana, and on the other a vigorous plant of C. Iris with six blooms on two spikes. Læliocattleya Ophir has broader segments than are usually seen in this hybrid between C. aurea and L. xanthina, while in Lc. Nysa the characters of both parents are equally inherited. Among the Cypripediums are Neptune, with long petals derived from C. Rothschildianum; C. Euterpe, also known under its earlier name Arthur; and C. Harrisianum superbum, which has a historic interest on account of being the first raised hybrid Cypripedium, the result of crossing barbatum with villosum, the plant flowering for the first time in 1869. When one considers the number of Cattleya Iris that have been raised and distributed it is somewhat surprising to notice how few remain. Probably its constitution is not one that allows it to withstand

many errors of treatment. The plant in Mr. Phipp's collection shows much evidence of being in a healthy and vigorous condition, doubtless through his careful attention.

ORCHID HUNTING IN SOUTH AMERICA.

ON several previous occasions interesting articles have been contributed to these pages by Mr. J. J. Keevil, notably those on Brazilian Orchids (*Orch. Rev.*, xvii., p. 98, and xviii., p. 28). From a recent communication we learn that Mr. Keevil left Santos in 1916 and spent three years at Manaos, 1,000 miles up the Amazon, on the Equator. He had a motor-boat of his own called Lælia, in which he could sleep and cook comfortably. He writes: "At high river, May-September, the forest gets flooded up to twenty miles from the banks. Trees, fifty feet in height, are submersed for months, but being used to it, suffer no damage. It is then easy to cruise amongst the tree-tops and gather Cattleya Eldorado, Oncidium Lanceanum, Schomburgkia crispa, etc., but the equatorial Orchids cannot vie with those of Central and South Brazil. Duck shooting is good when the river is falling. There are two species, both with spurs on their feet to enable them to roost and nest in the trees! Occasionally, to retrieve one it is a question of racing an alligator, whose taste for duck flesh renders him indifferent both to curses and No. 1 shot. Fishing is fair and productive of surprises.

"Whilst in Manaos I met several times Kramer. He was a genuine lover of Orchids, and had collected them for 50 years. I gave him some C. labiata, which he had never seen. He had great pleasure in flowering them some two years ago just before he died. After Manaos, I had six months in Rio Grande do Sul, in the extreme south of Brazil. Too cold for Orchids, but hard to beat for fishing and snipe shooting; seven once fell to one cartridge!"

GHENT QUINQUENNIAL EXHIBITION OF 1923.—The Organising Committee appeals to horticulturists to prepare their exhibits for this demonstration of horticultural art. The programme of the exhibition, which comprises no fewer than 778 classes, will be sent on receipt of a request addressed to "Palais de l'Horticulture et des Fêtes, Ghent, Belgium." An advertising stamp to affix on correspondence has been prepared. The wording is in English, Flemish and French, and the design represents the three principal towers in the centre of the city of Ghent. Copies of these will be sent to anyone interested, on request. The XVIIIth Quinquennial Exhibition, organised by the Royal Agricultural and Botanical Society of Ghent, the oldest on the Continent, promises to surpass its predecessors, which for more than a century have followed the progress of horticulture.

CULTURAL NOTES.

WITH the arrival of autumn various changes take place in the details of cultivation. All shading can be done away with on the hot houses, and nearly so on the Odontoglossum house, only during the middle part of the day when bright sunshine prevails will any protection be required. Glasshouses situated in the open country will, of course, need more attention in this matter than houses partially shaded by buildings, or in localities where the atmosphere is inclined to be foggy. The past season has not been one of the best for Cattleyas, and many plants are behind in the completion of their bulbs. Where circumstances allow it is a good plan to sort out the plants, placing those with unfinished bulbs in as favourable a position as possible, such as near the glass, or suspended from the roof. The majority have made up their bulbs and will want a nice situation where the flowers will develope and be shown to advantage. Root action will probably continue vigorously for some time yet, and water will still be required, although in less amount, but it should not be withheld to such a degree as to cause the bulbs to shrivel. It is a bad method to give only a small quantity at a time, sufficient to permeate the whole of the compost is advisable, and this should be done early in the day so that any surplus may drain off before night time. If the day looks like being wet, or the weather remains cold, it is better to delay watering the plants, but the surrounding staging and floor should be damped down, which will maintain the atmosphere in a suitable condition.

Odontoglossums and Odontiodas will require much attention. Many of them will need repotting, not necessarily into larger pots, but into fresh compost. In doing this all the material that has become very soft should be carefully removed and its place occupied by fresh fibre and moss, mixing a few chopped oak leaves in the case of the smaller and unflowered plants. It is not an easy matter without seeing a plant to determine the number of bulbs necessary, but four or five is a good average. The older bulbs should be removed, which will oftentimes allow the same size pot to be utilised again, or one just a trifle larger. There should be ample room for the new growth to be completed, and when working in the fresh compost as much as possible should be placed around it, not near the old bulbs, as is sometimes done. A good potting stick can be made out of the handle of an old tooth-brush. Gradually work in the compost around the plant first, adding more until it reaches the side of the pot. Work it in tightly, and on completion trim the surface with scissors. The compost should be sufficiently tight to prevent the pot falling off when the plant is held up by the hand. Some cultivators use enough compost to fill the pot to within half an inch of the rim, afterwards adding a layer of sphagnum moss to

complete the job, but this method should only be adopted in the case of small pots.

Ventilation is a matter too often neglected by amateurs. It is not suggested that the ventilators are never opened, but that more frequently they are left wide open day and night irrespective of the weather conditions. The bottom ventilators may generally be left open until winter weather arrives, but the top ones should not be opened more widely than is absolutely necessary, for if a strong current of air passes continuously through the house, it will very soon carry off most of the atmospheric moisture that is so essential to the welfare of these cool-growing plants. A sudden outburst of sunshine may cause the interior temperature to rise rapidly, and then a little more ventilation may be given, for at this period of the year it is advisable not to let the plants get too soft in their condition of growth. One of the advantages of roller blinds, either of canvas or laths, is that they can be used at any time, and are thus far superior to any form of permanent shading. They are useful during a short period of bright sunshine on a house of delicate seedlings, and also at night as a protection from severe cold. Fire heat is now a necessity at night-time in most localities, and any amateurs who are able to forecast the weather will find it to their advantage to do so. A bright sun-shiny day is frequently followed by a cold frosty night.

There is a neat little plant called Sophronitis grandifllora that always comes in for much admiration when in flower. Almost every amateur has had it in his collection at one time or another, and even now it holds its own alongside many of the Sophronitis hybrids. Shallow pans are best for its cultivation, and when suspended from the roof of the cool house, as they generally are, care should be taken that the position is not one where a cold draught will effect it each time the ventilator is used. Specimens often deteriorate in the centre, necessitating the careful separating of the several pieces and re-arranging them so that the new growths have ample room for development and their roots can easily enter the fresh compost. The finest fibres should be selected for use with this species, and if a few chopped oak leaves are added better results may be expected. The pans containing these plants hold such a comparatively small quantity of compost that it does not seem to matter whether the sphagnum moss is mixed with the fibre or inserted in tufts near the edge. S. grandiflora does not as a rule send down its roots more than a short distance from the surface, consequently but little depth of compost is necessary. If somewhat deep pans are used ample drainage material should be placed in the bottom.

At this time of the year many of the Cattleyas have completed their bulbs and will need looking over for any insect pests. It is more likely that scale will be found on the older bulbs than the last one made, and if

any dry and partially loose skin exists it is advisable to carefully examine the under surface, for it forms a favourite hiding place. Washing with a sponge and suitable insecticide will generally remove most of the scale, although sometimes a brush is necessary. Another likely place is on the apex of the old bulbs in the crevices formed by the remnants of the old flower sheaths, and in this part of the work a small pointed stick comes in useful.

AN AMATEUR'S EXPERIENCE.

By Josephine R. Walker.

OUR Odontoglossums seem to be growing quite well, though the heat is greater than they are expected to have. We potted up some back bulbs in moss and kept them a little drier than the others, with the result that out of eight, four have started into growth within four weeks of potting; the two Odontiodas have made really strong leads. We hope they will continue to progress satisfactorily. At the end of the house where they are it is quite cool at night time, and we are having heavy mists earlier than usual.

The Dendrobiums are now nearly all out of the "Monkey House," and are hanging up in order to get all the sunshine that occurs. They have about finished their last leaves and are only having water when quite dry. The bulbs are thickening up well. Some of the Læliocattleya seedlings are producing their first sheaths, very small, of course. The majority are making larger bulbs, with pairs of leaves instead of single ones, and which, we hope, are a sign of sheaths and bloom next year. As the plants finish up we put them on a shelf close to the glass to ripen the bulbs. Less water is given, and like their stronger brothers they root very vigorously under the treatment, so we live on in hopes.

We have some fine spikes on the Mexican Lælias, but others with bulbs quite as good are without any, and one wonders why. The Lælia Gouldiana have all done so, and they were also disturbed last spring. All the Vandas in the roof are growing and rooting well, but there are no flower spikes. One of them, a fine plant with three leads, is growing on a block of wood, and has a tangled mass of roots, the majority of them new this year. The plants on blocks do not make the short straight roots that are seen on those grown in pots. Perhaps we have failed to dry them off, but one always reads that the roots show signs of sealing over; our plants only send out more, with no thoughts of sealing or blooming. A friend wrote me that his were already showing for flower.

We have three very tame toads in the green house. They come out to be fed with worms, but to-day I found one of them eating a blackbeetle. We

always believed they eat woodlice, so anyone who has beetles might see whether a few toads would keep them under.

Though we have many less Cypripediums this year, they are showing up their flower buds in good time. Amateurs who grow them will be sure to get flowers at Christmas time. They last a long time in perfection, and when brought into the house will stand quite a lot of injurious atmosphere. I do not cut the flowers, but bring the plants into the house for decorative purposes. No matter how late it may be, the plants are always taken back to the greenhouse at night time, and I am well rewarded for the little extra trouble.

DENDROBIUM CRUMENATUM.—A note in *The Journal of Botany* for September refers to Dendrobium caninum, Burm., a new combination proposed by Mr. Merrill to replace the well-known D. crumenatum. Mr. H. N. Ridley states that this cannot possibly be Burman's Epidendrum caninum, which was based on a wholly different plant described by Rumphius as Angræcum caninum. The original A. caninum is described as having large fringed purple flowers, smelling of dogs. From this and other facts, Mr. Ridley says it seems quite clear that the name D crumenatum must stand for the Pigeon Orchid, and cannot be replaced by C. caninum.

ROYAL HORTICULTURAL SOCIETY.

September 5th, 1922.

MEMBERS of the Orchid Committee present:—Sir Jeremiah Colman, Bart. (in the chair), Messrs. Jas. O'Brien (hon. sec.), Pantia Ralli, J. Wilson Potter, E. R. Ashton, H. T. Pitt, Fred. K. Sander, C. J. Lucas, Gurney Wilson, T. Armstrong, W. J. Kaye, and J. E. Shill.

AWARDS OF MERIT.

Cypripedium Albion (niveum × Astarte); from Messrs. Stuart Low & Co. A fascinating little flower of porcelain-white texture, very slightly spotted, and with the staminode greenish-yellow. C. Astarte is the result of crossing insigne Sanderæ with Psyche (niveum × bellatulum), and the predominant percentage of the two latter species accounts for the broad segments seen in C. Albion.

Læliocattleya Carmencita, Claygate Lodge variety; from J. J. Bolton, Esq., Claygate, Surrey. An unusually fine variety of this hybrid between C. aurea and Lc. luminosa. The sepals and petals are golden citron-yellow, and the prettily-formed labellum intense ruby-crimson. The contrast being very effective.

SILVER-GILT LINDLEY MEDAL.

Arachnanthe Lowii; from Sir Jeremiah Colman, Bart, Gatton Park, Surrey. The above medal was awarded to Mr. J. Collier, who had cultivated this rare plant so well that it consisted of three stout stems, well provided with large leaves, and carrying eight long spikes with a total of 160 flowers.

GROUPS.

Messrs. Stuart Low & Co. were awarded a Silver Flora Medal for an extensive exhibit containing the pretty Miltonia Binotii, good examples of Vanda cœrulea, the rare Aërides odoratum album, Lælia crispa, a fine variety of Cattleya Gaskelliana alba, the pretty Dendrobium Dearei, Lc. Marmion, with richly-coloured flowers, and an example of the scarce Odontoglossum Schlieperianum citrinum, with citron-yellow flowers.

Messrs. Sanders were awarded a Silver Banksian Medal for an interesting exhibit in which the rare Stanhopea peruviana aurea was in a conspicuous position. Cattleya bellatula and C. Adula were well represented, the latter by Sanders' variety, a remarkably rich crimson-purple flower. Lc. Britannia alba had a spike of three flowers, white, with purple mottling on the lip, while another attractive plant was seen in a well-flowered example of Odontonia brugensis.

Richd. G. Thwaites, Esq., Streatham Hill, exhibited six specimens of his strain of Cattleya Hardyana alba, in which the sepals and petals are clear white, and the lip bright purple. The finest of these bore the varietal name Mrs. Allan.

Baron Bruno Schröder, Englefield Green, Surrey, staged Læliocattleya Rubicon (C. Hardyana × Lc. Geo. Woodhams), of rich purple colour, the labellum still darker, and tinged with crimson.

J. J. Bolton, Esq., Claygate, exhibited Sophrocattlælia His Majesty, a handsome flower, with mauve-pink sepals and petals, the latter flushed with rose-crimson on the median area.

September 19th, 1922.

Members of the Orchid Committee present: Sir Jeremiah Colman, Bart. (in the chair), Messrs. Jas. O'Brien (hon. sec.), J. E. Shill, F. J. Hanbury, C. J. Lucas, A. Dye, W. Wilson Potter, Fred. K. Sander, Gurney Wilson, C. H. Curtis, and Stuart H. Low.

FIRST-CLASS CERTIFICATE.

Læliocattleya Pyramus (Lc. St. Gothard × C. Thurgoodiana), from Messrs. Charlesworth & Co. A remarkable example of this comparatively new hybrid. The spike carried two immense flowers of perfect formation, bright purple in colour, the petals slightly frilled at the tips, the orbicular

labellum deeply frilled round the entire margin, of rich crimson-purple, and with orange yellow areas in the throat.

AWARD OF MERIT.

Odontioda Renown (Oda. Coronation × Odm. Victory), from Messrs. Armstrong & Brown. A finely developed plant with a tall spike carrying several large flowers and buds. All the segments broad, flatly displayed, and of a pleasing reddish scarlet colour.

CULTURAL COMMENDATION.

To Mr. J. E. Shill, for a superb example of the magnificent Brassocattlælia Amber, exhibited by Baron Bruno Schroder, Englefield Green, Surrey, and to which a First-class Certificate was awarded September 21st, 1920. On the present occasion, the spike carried three large flowers of fine proportions, and of a golden-amber colour, the lip having a slight rose mottling round the margin.

GROUPS.

A Silver Flora Medal was awarded to Messrs. Charlesworth & Co. for an excellent exhibit containing fine varieties of C. Lord Rothschild, C. Enid, with broad petals, Lc. Golden Wren, of a pleasing apricot-yellow tint, Lc. Athene, rich purple, Cypripedium Kimballianum, Cyp. Rappartianum, and Cyp. J. H. Veitch, the latter remarkable for its long and handsome petals. Among the yellows was a fine plant of Brassocattleya Sofrano.

Messrs. Armstrong & Brown were awarded a Silver Flora Medal for an attractive selection of hybrids. The plants were fine examples of good cultivation, and included Cattleya Iris with 14 flowers, another with 7 blooms on a spike, C. Maronii, with a fine cluster of 10 pretty flowers, Læliocattleya Geo. Woodhams, with several deep purple flowers, also Lc. Henry Greenwood, and the singular Oncidium Kramerianum.

Messrs. Sanders received a Silver Banksian Medal for a neat group of choice hybrids, among them being Cattleya nivea (C. Leopoldii alba × C. Lady Veitch), with creamy white flowers, C. Fulva, always pleasing, C. Iris, the pretty C. Dupreana alba, Læliocattleya Soulange, showing much aurea influence in the lip. In the centre was a fine plant of Odontonia brugensis with numerous rose-purple flowers.

Messrs. Flory & Black staged Brassocattleya Ilene, with large rose coloured flowers, Brassocattleya Caduceus, a very pretty result, in which the delicate tinted flowers had a lilac-pink lip, also Lc. Chimæra Rosita, with cream coloured sepals and petals, and the handsome Cirrhopetallum Rothschildianum.

Messrs. Stuart Low & Co. exhibited Cattleya Suavior picta, the result of crossing C. intermedia Aquinii with C. Mendelii, the broad petals carrying forward the peculiar purple blotches seen on the petals of the former parent.

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NOTES.

BRITISH ORCHIDS.—Under the title "Some Notes as to British Orchids (1922)," Mr. C. B. Tahourdin, of Wallington, Surrey, has issued an 8-page pamphlet containing much useful information as to localities where he has found the various species during the present year. Illustrations are given of Orchis maculata, O. latifolia, and O. praetermissa, as well as of O. hircina. Concerning the latter, commonly known as the Lizard Orchid, Mr. Tahourdin found a specimen with about 46 flowers near Lewes, and records another, with as many as 90 flowers, that was found near the same town.

DENDROBIUM ARACHNITES.—This charming little species with its attractive flowers of cinnabar colour has recently been flowering in the collection of Lieut.-General Sir A. G. F. Browne, K.C.B., at Lower Bourne, Farnham. It is a native of Burma, and was discovered by Boxall when collecting for Messrs. Low & Co. The stems are barely three inches high, and the flowers are borne in fascicles of about three, and are of brilliant cinnabar-red, not unlike the colour seen in Lælia harpophylla. When Reichenbach described this species in 1874 he remarked: "Since the time when Sir Wm. Hooker described his unique Dendrobium amboinense, no such remarkable and extraordinary gorgeous Dendrobe has been discovered." D. arachnites flowered in Mr. Lee's collection at Downside, Leatherhead, in 1886, when Mr. Day copied it for his collection of Orchid Drawings. At the present time there is a fine specimen in the Gatton Park collection.

EPIPACTIS LATIFOLIA.—At the Scientific Committee meeting of the Royal Horticultural Society held on Sept. 19th, Mr. John Fraser exhibited a remarkable inflorescence of Epipactis latifolia which he had gathered on the part of Box Hill recently opened to the public, where it is plentiful. Although the spike carried no less than forty flowers, there was only a single instance in which any apparent attempt had been made to form an ovary. The pedicels were much elongated, many being an inch in length; in some

cases two were produced from the same node, the subtending bract then being considerably broader or else formed in duplicate. No less than fourteen of the pedicels bore two flowers or buds, while four carried as many as three, the additional flowers in every case being accompanied by separate bracts. Nearly all the flowers showed an increase in the number of their segments, this peculiarity being much more marked in the upper portion of the spike. The lip frequently occurred in duplicate, as well as triplicate, while the characteristic tubercles on the disc thereof were much elongated. In some flowers there were three elongated filaments resembling anthers. This species is also known under the name Heleborine latifolia, and the above mentioned specimen was found growing in the shade of beech trees in a wood.

ABNORMAL CATTLEYA.—A very remarkable example of adventitious growth has occurred in Cattleya Bowringiana, which Messrs. Sanders, of St. Albans, have recently brought to our notice. When cutting off the old flower-spike about two inches of the stalk was allowed to remain on the pseudo-bulb, and from this portion two strong growths subsequently made their appearance, one opposite each of the leathery leaves that are normally borne at the apex of the bulb. The two growths had reached the height of four and five inches, respectively, and doubtless would have developed fully in course of time had not the pseudo-bulb been severed from the plant. It appears that the pseudo-bulb had extended itself above the pair of leaves, and produced there at least three buds, two of which were forced into activity by the removal of the flower spike. This occurrence may be described as lateral foliar prolification of the inflorescence. With Dendrobiums it is the usual course of events for buds to be formed on the pseudo-bulbs and when these take the form of adventitious growths they are made use of for propagating purposes. A somewhat rare event is for the buds on the flower stems of Phaius Wallichii and various Phalænopses to produce young growths. But with Cattleyas no such buds are formed, hence the above event in Cattleya Bowringiana is extremely interesting and worthy of being recorded.

DEATH OF MRS. O. BARTELS.—We much regret to hear that Mr. O. Bartels, of Mayne, Brisbane, Australia, has sustained a severe loss by the death of his wife. As many of our readers are acquainted with the keen interest taken in Orchids by Mr. Bartels, and the kindly manner in which he so readily furthers their cultivation, wide sympathy will be extended to him in his bereavement, the more so as it comes so soon after the loss of his daughter.

LÆLIOCATTLEYA MOMUS.

THE accompanying illustration of Læliocattleya Momus represents the very fine variety that received a First-class Certificate at the Royal Horticultural Society, July 18th, 1916, when exhibited by Messrs. Charles-

LÆLIOCATTLEYA MOMUS, F.C.C., R.H.S., JULY 18TH, 1916.

worth & Co. It was purchased by Mr. Wm. R. Lee, of Plumpton Hall, Heywood, and at the sale of his plants passed into the possession of J. J. Bolton, Esq., who now resides at Claygate Lodge, Surrey, and whose rich collection was described in our last issue. This variety has always been

considered one of out-standing merit, and during the past season the plant progressed so favourably that in September it produced the beautiful flower now illustrated, and which exceeded seven inches in width when measured across from point to point of the petals.

Lc. Momus is the result of crossing Lc. Rubens (C. Hardyana × L. præstans), with C. Octave Doin (C. aurea × C. Mendelii), the seed-bearing parent being composed of aurea, gigas and præstans, the pollen parent adding Mendelii, from which it will be seen that four species have been utilised in the making of this hybrid. Everyone experienced in the production of hybrids is fully acquainted with the wide variation witnessed in seedlings raised from the same seed-pod. Lc. Momus is no exception to this rule, for there were varieties that resembled nearly all the hybrids that have been produced by various intercrossings of the above species.

One of the weak features of many Læliocattleyas is the drooping nature of the petals, and in order to remedy this defect a small-growing species known as Lælia præstans has been utilised. This species and L. pumila are very similar, and although frequently confused there is just sufficient difference to distinguish the one from the other when in flower. Both yield flowers of only moderate size, but their petals are unusually well developed, and this excellent character sometimes comes out prominently in seedlings containing either of them in the parentage. Not only do the petals in this particular variety of Lc. Momus meet one another, but they actually overlap and cover the lower half of the dorsal sepal. The general colour of the flower is rose-purple, rendered bright by the influence of C. aurea, as often occurs, while the lip is rich crimson-purple with gold lines on the central area and the base surrounding the column.

POLYSTACHYA MINUTA.—The issue of *Addisonia* for June, 1922, contains a coloured plate of this species, a native of Florida, the West Indies, and South America. It is the type species of the genus, and was first described from plants collected in French Guiana prior to 1775. The accompanying text states that this is one of the most abundant and widely distributed Orchids of tropical America, usually found growing on trees in moist or wet situations, but like some other epiphytic plants it is sometimes seen on rocks or cliffs, indicating that the epiphytic habit is a mechanical rather than a biological one; its cord-like roots clasp the tree or rock rather firmly.

EPIDENDRUM ATRORUBENS, Rolfe.—A Mexican species with dark red-purple flowers, belonging to the section Encyclium, and allied to E. selligerum, Batem, and E. plicatum, Lindl. It flowered with Messrs. Linden, Brussels, in October, 1892.—*Kew Bulletin*, 1896, p. 44.

CYPRIPEDIUMS—THE SELENIPEDIUM SECTION.

By HAROLD RAVEN, The Croft, Ruddington, Notts.

THOUGH completely unfashionable to-day, one or two Selenipediums are to be found in most collections, neglected, tucked away in some obscure corner where, in spite of lack of attention that would kill most Orchids, they persist, and flower almost as freely as weeds. A good deal of their unpopularity may be put down to this readiness to please, to their easy culture and moderate price; were they suddenly to become rare, or be found difficult to grow, they would speedily be lifted from this obscurity and found worthy of better treatment.

This section, which is endemic to Southern America, is found in the forest country of Peru, Costa Rica, Colombia, Ecuador and Brazil. In appearance the various members are much alike, having shining light green leaves, in some varieties such as caricinum, borne in a reed-like manner, the flowers are carried well above the leaves, on two to four-flowered spikes, and range in colour from pale rose to greenish-white and creamy-yellow. C. caudatum with its long, twisted ribbon-like petals, is at once one of the most curious and interesting plants in the genus; other well-known species are C. caricinum, longifolium, Roezlii, Schlimii and vittatum.

Constitutionally they are vigorous, rapid-growing plants, and a good rough compost of osmunda fibre and sphagnum moss with firm potting delights them. Water should be freely given, and they should be placed at the warm end of the Cattleya or intermediate house and afforded atmospheric humidity approximating as nearly as possible to their natural forest habitat. Personally I do not consider heavy shading advisable, in these, as in other Orchids, it is the strong, dark, well-ripened growths that produce the sturdiest flower spikes.

One of the strongest Orchids I have ever seen was a plant of C. Schröderæ that was growing in a lean-to vinery heated as a stove; the plant was standing on a gravelled stage at least fifteen feet from the roof glass, where in damping the stage it was inevitably deluged with water. Apparently it had not been potted for some years, for the pot was filled with roots and the compost had long decayed. And yet, in spite of these impossible conditions and the fact that it was frequently exposed to such strong sunlight that the leaves were scorched, it grew magnificently, its great polished growths with leaves often two feet in length, reminding one of a Clivia by their vigour; producing flower spikes that often had two or three flowers open at a time.

Since Dominy and Seden, the section would seem to have been entirely neglected in the advance of the genus through hybridisation; this, one cannot help but feel, is undeserved when one considers the successful results

these two pioneers of Orchid hybridisation achieved, in spite of the inadequate resources at their disposal. One has only to glance at a good form of either C. Schröderæ or C. Sedenii to realise the decorative improvement they are capable of and the great advance they show from this standpoint over their parents.

All the recorded hybrids have so far been between the various species composing the section, for there would appear to be an insurmountable barrier between this and the other more decorative and commercial sections, otherwise I can conceive of no reason why they should not long ago have been crossed.

The best known hybrids are albopurpureum (Schlimii × Dominianum), calurum (longifolium × Sedenii), cardinale (Sedenii × Schlimii), conchiferum (caricinum × Rœzlii), Dominianum (caricinum × caudatum), Schröderæ (caudatum × Sedenii), Sedenii (Schlimii × longifolium) and grande (caudatum × longifolium).

NEW HYBRIDS.

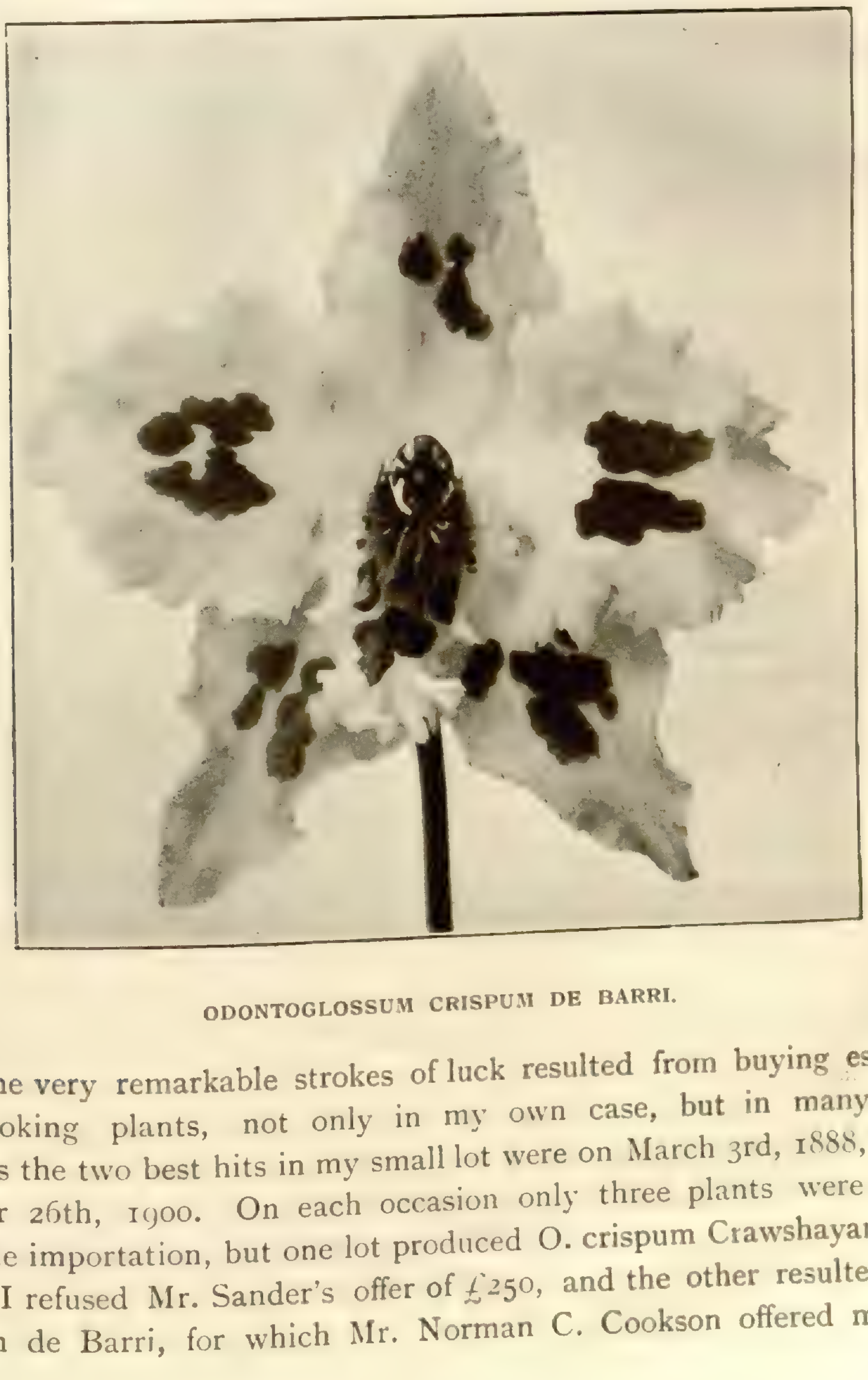
NAME.	PARENTAGE.	EXHIBITOR.
Brassocattleya Caduceus	C. Caduceus × Bc. Digbyano-Mendelii ...	Flory & Black.
Brassocattleya Scotia	C. Hardyana × Bc. Moneta	Charlesworth.
Brassocattleya Viscount Toda ...	C. Rhoda × Bc. Ilene	Flory & Black.
Brassocattlælia Thurgoodiana ...	Blc. Eric × C. Thurgoodiana	Flory & Black.
Cattleya Cynthia	C. Dowiana × C. Tityus	Charlesworth.
Cattleya Cytherea	C. Venus × C. King George	Flory & Black,
Cattleya Dr. G. G. Macdonald ...	C. Kienastiana × C. aurea	Flory & Black.
Cattleya Mimosa	C. Venus × C. Triumphans	Flory & Black.
Cattleya nivea	C. Leopoldii × C. Lady Veitch	Sanders.
Cattleya Verona	C. Octave Doin × C. Pittiana	Flory & Black.
Læliocattleya Benita	C. Schrœderæ × Lc. Fascinator-Mossiæ ...	Charlesworth.
Læliocattleya Clarinda	Lc. bletchleyensis × C. Rhoda	Flory & Black.
Læliocattleya Elvasea	Lc. Elva × c. Rubens	P. Smith, Esq.
Læliocattleya Golden Sunset ...	Lc. Appam × C. aureole	S. Gratrix, Esq.
Læliocattleya Iver	Lc. Rubens × C. Lueddemanniana ...	Flory & Black.
Læliocattleya Novara	C. Mrs. F. Hurndell × Lc. Colmaniana ...	Stuart Low.
Odontioda Aidan	Oda. Bohnhofiæ × O. ardentissimum ...	Charlesworth.
Odontioda Bianca	O. Lambeauianum × Oda. Diana ...	Charlesworth.
Odontioda Renown	Oda. Coronation × O. Victory	Armstrong & Brown.
Odontioda Urania	O. Epicasta × Oda. Brunette ...	Charlesworth.
Odontoglossum Alastor	O. Aireworth × O. Dusky Monarch ...	Charlesworth.
Odontoglossum Canopus	O. illustrissimum × O. Prince Albert ...	Charlesworth.
Odontoglossum Hesperus	O. amabile × O. Alexandrina	Charlesworth.
Odontoglossum Kenneth	O. percultum × O. l'Empereur	Charlesworth.
Odontoglossum luridum	O. Harryanum × O. Olympia	Charlesworth.
Odontoglossum lutescens	O. Lawrenceanum × O. Rolfæ	Charlesworth.
Odontonia St. Mungo	M. Bleuana × O. Georgius Rex	Charlesworth.
Oncidioda Medina	C. Nœzliana × On. corynephorum ...	Charlesworth.
Sophrolælia Katrina	Sl. heatonensis × Sl. Carna	Charlesworth.
Sophrolæliocattleya Antiope ...	C. Antiope × Slc. Laconia	Flory & Black.
Sophrolæliocattleya Cytherea ...	Slc. Gratrixiæ × C. Empress Frederick ...	Flory & Black.
Sophrolæliocattleya Marisis	Slc. Marathon × Slc. Isis	Charlesworth.

REMINISCENCES OF MY ORCHIDIC LIFE.

By DE BARRI CRAWSHAY, O.B.E.

(*Continued from p.* 299.)

FROM an analysis of the cost of imported crispums, I find that up to the end of 1886 I paid an average of 13s. 10d. per plant, 400 of them at auction averaging 10s. 3d. Of course, auction bidding constantly realised a higher price for a particular looking plant than a private contract would, especially when an individual plant looked a blotched one in the eyes of two or more buyers.



ODONTOGLOSSUM CRISPUM DE BARRI.

Some very remarkable strokes of luck resulted from buying especially good-looking plants, not only in my own case, but in many others. Perhaps the two best hits in my small lot were on March 3rd, 1888, and on October 26th, 1900. On each occasion only three plants were bought from the importation, but one lot produced O. crispum Crawshayanum, for which I refused Mr. Sander's offer of £250, and the other resulted in O. crispum de Barri, for which Mr. Norman C. Cookson offered me £800.

Our financially inclined friends often told all of us who kept these high priced plants: "What a fool you are," but they quite forgot that had we sold them all at once some of us would never have had the fine results we have now in our hybrids resulting from them. Almost all raisers have had one particular plant that has given them a fine race of hybrids. I have been fortunate in having three that have given me very fine breeds whereon to work.

From 1880 till 1890 the firm of Sander imported the vast majority of the crispums, Shuttleworth & Carder coming next, and for whom John Carder collected. Other importers were The New Plant and Bulb Co. and F. Horsman & Co., both father and son carrying on the latter business. In course of time Mr. J. Charlesworth acquired the business of Mr. Shuttleworth, and went to South America, from where he sent home immense quantities of Orchids, among them noteworthy importations of Odontoglossum Hallii and Oncidium macranthum. Mr. Carder retired from his old firm and sent his consignments to Mr. A. van den Bogaerde, of Great Barr, Birmingham, who removed to Perry Barr, a place that subsequently became a notorious haunt of the crispum buyer. Later on Mr. H. A. Tracy, of Twickenham, became an agent for crispum exporters.

In May, 1903, Senor Camacho arrived in London with some 30,000 plants, and for two years simply flooded the market with them by repeated auction sales. Messrs. Stanley Ashton & Co. imported very large quantities, and also Mr. H. Whateley, of Kenilworth. During the later nineties Mr. T. Rochford, of Turnford Hall, commissioned Mr. Carder to send him an immense number of crispums wherewith to create the cut flower market in them, and out of them he bloomed some very fine things, including O. crispum Pittianum. Besides the above firms there were others who imported crispums into England, as well as numerous firms on the continent. Many importations were also received direct, a term implying much or little as the case might be. The immense numbers imported were the direct result of the high prices period for the blotched ones, and the business only ceased when the hybridist succeeded in producing them at home. We can all remember the days when we used to say: "There will be no crispums left in Colombia," but in the last decade they have had time to increase in the districts where the forests have not been cut down before cultivation and cattle production.

In 1907 it can almost be said that the importation of O. crispum ceased, with the exception of a few consignments at irregular periods. On looking at my late purchases the entries are one transaction each year in 1907, 1908, 1912, 1914, whereas in former years it was continuous and in thousands. The last four years only added eighty plants to my former total. Mr. Sander imported the last Pachos, which I believe came to England in 1914.

He was always intensely interested in "crispums," and to him we owe the thousands of lovely varieties we have had during a quarter of a century. His immense energy stimulated all the other firms to do likewise, and resulted in the great number of natural crispums, both blotched and plain, which are still to be seen in many collections.

LÆLIAS.

I purchased three plants of Lælia peduncularis on December 23rd, 1880, as my introduction to Mexican Lælias, a genus in which I was to become deeply involved and interested. Some small bits of Lælia majalis were also obtained; these two difficult species grew for a time and were then discarded. On February 7th, 1881, I saw Lælia anceps in bloom at Stevens' Rooms. The plant came home with me that evening, and I can clearly remember putting it on a table in the drawing room and "gathering around" it in admiration. I felt that L. anceps had come to stay. It was a bad variety, and when I had much better ones it was discarded at a profit. L. albida and L. autumnalis were acquired soon after, but they never had a chance alongside L. anceps. On July 28th, 1881, I bought three plants of L. anceps at Stevens' Rooms, and one of them was subsequently figured in the second volume of the *Orchid Album*, an occurrence of which I was very proud indeed.

Lælia anceps came slowly, as there were no importations, or else the price was too high for me. Mr. Sander imported some enormous masses of L. anceps Hilliana, which were sold at Stevens' on January 13th, 1881, one being purchased at a high price by Sir Trevor Lawrence. In the Batten sale of March 21st, 1883, I secured my first white anceps, a little plant of this pretty variety at one-third of what it cost Mr. Batten in the imported state. It is a peculiar thing that a plant when first sold on arrival should almost invariably fetch a higher value than it would realise as an established plant even though still unflowered. On February 2nd, 1884, a small importation of L. anceps appeared at Messrs. Protheroe & Morris; one mass as large as a front-door mat of the variety Percivaliana fell to my bid of 19 guineas. The following winter it bloomed—a good typical anceps, so the importer, Mr. F. Horsman, Senr., fully compensated me.

In 1885, Mr. Sander steps in again and begins importing white anceps by the shipload. Those who to-day remember the enormous masses of what became Schrœderiana, Stella, and Sanderiana will recall sales of intense excitement and long prices. On January 23rd, 1885, he offered a grand plant in bloom of Williamsiana, the first of that variety, which fell to Baron Schröder at 90 guineas. Fancy such a price to-day for a narrow segmented anceps, otherwise a starry thing, such as is decried owing to the florist's flower form having been adopted as correct.

In the winter of 1885-6 the Liverpool Horticultural Co. began

importing anceps in immense numbers, and many batches came to Rosefield. Out of the same importation came Chamberlainiana, Crawshayana, and Thompsoniana. The former was, and is, the grandest typical anceps known. Mr. Chamberlain and I often corresponded upon L. anceps and exchanged plants of our namesakes, and when he bloomed mine, wrote to say how pleased he was to have the next best anceps to his own variety, though his gardener, Burberry, said he liked Crawshayana better.

In respect of the variety Thompsoniana I was able to clear up a very interesting fact that it was a piece broken off the great mass that bloomed and became Chamberlainiana. Mr. Thompson, of St. Helens, Lancs, bought some plants off the Liverpool Horticultural Co., and one of which Mr. O'Brien named after him (*Gard. Chron.* 1890, p. 716). I had always hoped to see this, which read like a very grand one. In March 1898, in reply to my letter of enquiry, Mr. Thompson sent me the plant to bloom for him. It was in poor health, but I could see that the bulbs were exactly like those of Chamberlainiana, and on January 12th, 1908, one of the two plants (I had divided it) bloomed and proved to be a part of the great Statesman's namesake. Mr Thompson sold the two plants at Protheroe & Morris' on January 24th, 1908, when they were purchased by Mr. R. Brooman-White.

It was strange how fortunate I was in blooming good forms and securing a First-class Certificate for Crawshayana, and Awards of Merit for Mrs. de B. Crawshay and rosefieldiensis, all of which had been imported by the Liverpool Horticultural Co., from districts that produced the dark type called "morada."

The quest of anceps was a hobby that few collectors paid much attention to, Baron Schröder, Sir Trevor Lawrence, Sir Jeremiah Colman, Mr. E. Ashworth, and myself being those most interested in this elegant Mexican plant. One of the reasons against its cultivation is that a deficiency of light in winter cripples its flowers, and if a bad fog comes on when the buds are opening, away go the season's blooms, hence growers in the north and close to large towns avoid this species.

One form of anceps that was always a great rarity and commanded an almost prohibitive price was Schrœderæ, and its sub forms Amesiana and Ballantineana. These were my greatest ideals in anceps owing to the gorgeous velvety-purple of the lip, and the exquisite deeper colouring of the outer one-third of the sepals and petals. For years I had to be content with wishing for them, but ultimately by a stroke of good luck and a little foresight, the result of close study of the typical features, I became the owner of more Schrœderæs than all the other holders put together. The original Schrœderæ was named by Reichenbach (*Gard. Chron.* 1887, p. 72)

and shown by Baron Schröder at the Royal Horticultural Society, January 10th, 1888, when it received a First-class Certificate. It was imported by James Backhouse & Sons, of York, in a small quantity, of which one plant was purchased by the Baron. Some thirty small plants in all were distributed among collectors.

In 1888 Amesiana appeared from an importation of Mr. F. Sander, the actual plant having been selected in 1883 by Mr. E. Harvey, of Aigburth,

LÆLIA ANCEPS CRAWSHAYANA.

near Liverpool, as distinct looking. When it bloomed in November 1888, it was repurchased by Mr. Sander for 200 guineas and subsequently distributed among amateurs. Though Amesiana was subsequent to Schrœderæ, it was generally much better known than the darker variety, and the two were much mixed up.

For many years no more of this beautiful plant was imported until Messrs. Lewis & Co., of Southgate, received a little lot in 1897. Mr.

Walker, of Winchmore Hill, bought a plant soon after they arrived, but it fell to my luck to acquire the whole of the remainder in the following winter, when one of them flowered. This became Amesiana Crawshay's var., receiving an Award of Merit at the Royal Horticultural Society, January 11th, 1898, and a First-class Certificate on Jan 31st of the following year.

There was no doubt in my mind that these velvety-lipped forms were as distinct a species from typical L. anceps as Cattleya labiata is from C. Trianæ, and I set to work to trace every plant of Schrœderæ and the original Amesiana. Having compared them all, I completed a re-classification of Mexican Lælias (*Gard. Chron.* 1902, p. 414) placing Schrœderæ as a species and Amesiana as a variety of it, as well as transferring my Amesiana and Ballantineana to Schrœderæ. Ballantineana was one of the pieces that came over with the original Schrœderæ, and was also purchased by Baron Schröder. I was pretty well satisfied for a time, as I had twenty-five plants of the velvety-lipped form that became much sought after.

In June 1898, and also in 1899, Messrs. Stanley Mobbs and Ashton, who had taken over the business of Lewis & Co. received importations of "L. anceps Dawsonii type." Evidently they had not been seen in bloom by anyone who knew Dawsonii. It was no trouble to recognise them as coming from the same place as my Amesiana, and I acquired 215 more "Velvet lips." These importations had been received from a collector named Pechacek, who afterwards sent plants direct to Messrs. Protheroe & Morris for sale on his own account. On June 28th, 1901, an importation was catalogued as "Lælia anceps Dawsonii type;" and consisted of several hundreds which had been delayed and had lost their leaves badly. I recognised these as being Schrœderæ and bought almost the whole importation, only letting a few lots go into other hands, and many of these I afterwards purchased. From these importations I bloomed the exact duplicate of every previously named form of Schrœderæ, as well as many other extremely beautiful ones, including Lionel Crawshay and Theodora. Mr. McBean blooming Grace Ruby, an exceedingly fine form.

My Mexican house was a sight nowhere else to be seen, being literally crammed full of Schrœderæ, which, when in bloom, presented a very beautiful spectacle. It was impossible to keep them all for ever, so gradually I disposed of many till every Schrœderæ and almost every remaining anceps stood at nil in my books.

Gradually it became known that I had cornered the Schrœderæs and had the largest stock ever held of them. With the great advance in the home-raised hybrids, Mexicans began to lose their popularity, and as my own stock of Odontoglossums and Odontiodas was rapidly overcrowding the houses I decided to part with the Mexicans. Messrs. Protheroe & Morris sold

the plants at Cheapside on October 25th, 1912, and November 28th, 1913. Thus the collecting and study of a most beautiful Orchid over a period of twelve years was scattered in a few hours.

I at once rebuilt the house for Odontoglossums and filled it with them, but the memory of the lovely "Velvet Lips" in the winter, and the "shovel-shaped" leaves, will never entirely fade from my memory. The group of graceful spikes was a most lovely sight, but afterwards there were graceful spikes in the house all the year round.

Other Lælias, especially purpurata, have all had their turn, and at one time the Cattleya house, as the Mexican house then was, contained a fine lot of big plants of L. purpurata, soon after the days of the great importations of 1884. These plants materially helped me to secure many a prize at the Royal Horticultural Society, the Royal Botanical Society, the Crystal Palace, and elsewhere, in the days when Douglas, Little, Cobb, and Crawshay fought for them.

Cattleyas had a good turn also, and Mossiæ, Mendelii, Dowiana aurea, and Trianæ all did well, Mendelii assisted very much in the prize winning. I never truly loved any Cattleya but aurea. C. Gaskelliana gave me a good run for my money. On July 6th, 1883, I bought one imported plant of Mr. Sander for 23s. On June 24th, of the following year it opened four flowers, produced on three leads, of snow-white sepals and petals, the lip having the faintest suspicion of tint on the blade. It was the first "alba" seen and took a First-class Certificate, R.H.S., July 8th, 1884. Baron Schröder commisioned Mr. (now Sir) Harry Veitch to ask me if I would take 100 guineas for it but needless to say I could not part with my possession of the only one known. I kept that plant till it died on the 20th October, 1908, so the typical Gaskelliana alba is no more.

On January 25th, 1884, I bought at Messrs Protheroe & Morris' one plant of an importation, also Mr. Sanders', paying 14s. for it. On July 11th, 1884, it produced six flowers on two spikes, and eleven days later it was awarded a First-class Certificate, R.H.S., as the type; other plants had been shown before, but no award had been made until this fine form appeared. It is figured in Reichenbachia vol. ii, t. 75. This plant I also kept till it died in 1891. It is a remarkable thing that two single plants should have enabled me to secure First-class Certificates for type and albino in a new species, a piece of good fortune that has fallen to no other exhibitor of Cattleyas.

Angræcums and Vandas were also great favourites with me, and at one time I had them in my competition groups. One large Vanda suavis Rosefield var.. travelled between Rosefield and London 250 miles in one season to various shows. My first plant of this variety, which was figured in the *Orchid Album*, vol. iv, t. 180, was bought at a cattle Show, viz. the

Bath and West of England, at Maidstone, June 9th, 1884, where it was being exhibited by Mr. Roger Leigh, of Barham Court, near Maidstone. It had five spikes and a total of 69 blooms open, and was a perfect plant, being leaved to the base, and having three fine additional growths. Some of the yokels who attended to the cattle were talking of the "wunnerful archid," while the new owner was listening, unknown to them. "They tell me," one of them remarked, "that he gave the valoo o' two bullicks for that 'ere thing, lor lummee, aint it a rum 'un." His friend thought deeply, and looking at the lovely Vanda exclaimed "More durned fool 'e." That settled the matter as far as he was concerned, and they passed on. The "durned fool" did not stop buying Vandas, for in June, 1891, hearing of another magnificent plant from the same source, bought it giving the value o' *four* bullicks for it.

ORCHIDS IN THE COLLECTION OF A. C. BURRAGE, ESQ.—The climate of the United States is never considered an ideal one for the culture of Odontoglossums and other cool-house Orchids, for the excessive heat generally experienced during the summer months is not conducive to their welfare. But in the hands of experienced persons a great measure of success can be obtained. Proof of this is seen in a photograph of the interior of a large span-roofed house filled with cool growing species and hybrids growing robustly and flowering freely in the collection of A. C. Burrage, Esq., of Boston, Mass., U.S.A., to whom the Gold Medal of the Massachussetts Horticultural Society was recently awarded. The Appleton Gold Medal was awarded to Mr. George I'Anson for his skill in cultivating them. This photograph of Mr. Burrage's cool house shows a profusion of bloom from one end to the other. Two remarkably fine varieties of O. crispum with broad petals, each carry about a dozen flowers, and close to them are two handsomely blotched varieties with similarly fine spikes. Some good forms of O. Pescatorei, and several hybrids between this species and O. crispum show much blotching on the segments. The strong characters of O. Harryanum are plainly visible in many of the flowers. In contrast to the white-ground flowers are many Odontiodas of scarlet and deep-red colour, all bearing excellent spikes of bloom. Mr. I'Anson also sends a photograph of a well-flowered plant of Cypripedium pubescens bearing upwards of seventeen flowers, and another of Cypripedium acaule alba with six flowers, the sepals and petals light green, the pouch pure-white. Mr. I'Anson remarks that this latter plant is a fine thing when seen flowering in company with the coloured form, and although one has to hunt to find it in his locality, it is said to be often seen in the State of Main. A note on this species was included on page 306 of our October issue.

ORCHIDS OF CENTRAL AMERICA

AMONG the features of interest in the programme of the forthcoming Ghent Quinquennial Exhibition are the classes for Orchids from special localities. These sections are not only of considerable attraction from a geographical point of view, but they stimulate our interest in many of the good old species of former days.

A Gold Medal and 100 francs are offered as the first prize for the best collection of Orchids from Central America, and as this area is particularly rich in notable species, there will no doubt be several interesting exhibits. A genus largely represented in this locality is Pleurothallis, and although upwards of 100 species have been described as coming from the above district, it is questionable whether many of them are in cultivation. A more important and even larger genus is Epidendrum, of which nearly 200 species inhabit Central America. Among the best known are E. prismatocarpum, discovered by Warscewicz, in 1849, on the volcano of Chiriqui, in Veragua; E. radicans, introduced from Guatemala, in 1839, by Ure Skinner, who stated that in its native country it grows among long grass and dried leaves and blooms from October to January, the flowers being brilliant red; E. vitellinum, with its attractive flowers of cinnabar-red colour; E. falcatum, discovered by Hartweg, in 1837, growing on rocks and loose stones near Oaxaca in Mexico, and of interest because it always grows in an inverted position; and E. Stamfordianum, which is peculiar on account of its branching spike coming from the base of the bulb.

Oncidiums come next in importance, some eighty species inhabiting this area. Among the popular members of the genus are O. tigrinum, described as long ago as 1825, and still of much interest to amateurs; O. sphacelatum, with its branched spike of numerous flowers, which in the bud state have the sepals and petals turned back like inverted horns; O. ornithorhynchum, sometimes known as the Bird's Bill Oncidium on account of its beaked anther; O. altissimum, always of interest as being one of the first Oncidiums known; O. ampliatum, with its handsome yellow flowers that open in the months of April and May; and O. incurvum, so named on account of the tendency of the petals to curve inwards when the flowers first open.

Although many Maxillarias inhabit Central America, only a few of them find favour with amateurs, possibly because the attractions of some are still unknown. A species occasionally seen is M. meleagris, bearing yellowish flowers thickly speckled with crimson-red, and described by Lindley in 1844; also M. nigrescens, with its singular dark flowers of lurid colour; M. rufescens, originally imported by Messrs. Low & Co., and which flowered for the first time in England in 1834; M. tenuifolia, discovered by Hartweg

in the vicinity of Vera Cruz, and sent by him to the Horticultural Society of London, in whose garden at Chiswick it flowered in the year 1839; and, lastly, M. variabilis, a plant of scandent habit which appears to have been imported by Messrs. Low & Co. before 1837.

The Odontoglossums comprise several well-known species that are frequently seen in collections. They are O. Uro-Skinneri, named after its discoverer, who found it on rocks at a considerable elevation near the village of Santa Catarina; O. bictonense, also discovered by Ure Skinner, and of special interest as being the first Odontoglossum to reach England alive; O. grande, still one of the most popular of species; O. Schlieperianum, which first appeared among a miscellaneous lot of Central American Orchids imported in 1856; O. pulchellum, with its pretty white flowers that are produced in the early spring months; O. Cervantesii, introduced to British gardens by Messrs. Loddiges in 1847; O. Rossii, represented in almost every collection; O. maculatum, which with the preceding forms the natural hybrid known as O. aspersum; O. nebulosum, first collected by Baron Karwinsky, in 1833, near Oaxaca; and O. Oerstedii, a native of the highest slopes and crests in Costa Rica, where it was discovered, in 1848, by Warscewicz.

There are several species of Lycaste worthy of mention, these being L. aromatica, first sent by Lord Napier from Mexico to the Botanic Garden at Edinburgh some time previous to the year 1826; L. cruenta, another of the discoveries of Ure Skinner in Guatemala; L. Deppei, first imported as long ago as 1828, and which subsequently became rare; L. lasioglossa, an interesting species with a shaggy lip; and L. Skinneri, one of the most popular Orchids of all times.

Of the remarkable genus Stanhopea, there are several elegant examples which are well known, and others that have been described at various times. They include S. oculata, first imported by Messrs. Loddiges, in 1829, from Xalapa, in Mexico, and one of the most generally cultivated; S. Martiana, dedicated to Prof. Martius, one of the earliest botanical explorers of the Amazon region of Brazil; S. Devoniensis, named in compliment to the Duke of Devonshire, in whose collection it flowered for the first time in this country in 1837; and S. Wardii, originally introduced by Messrs. Loddiges, in 1828, through their correspondent Mr. Ward, after whom it was named.

Of the genus Mormodes, Lindley remarked that we find among them the most astonishing deviations from ordinary structure and the most startling variations from what appears to be the rule in other parts of the organic world. The Central American species include M. buccinator, with its trumpet-like labellum, from which the specific name is derived; and M. luxatum, which with the variety eburneum is often seen in collections;

Cycnoches are represented among others by C. Egertonianum, which flowered as long ago as 1843 in the collection of Mr. R. S. Holford, at Westonbirt; and the genus Peristeria includes the stately P. elata, long known as the Dove Orchid from the fancied resemblance of the column and beaked anther, combined with the ascending side lobes of the lip, to the figure of a dove.

Each of the genera Habenaria, Microstylis and Stelis are represented by from forty to fifty species, but few of them are of horticultural value. Spiranthes comprises some fifty species in this area, and many of the less important genera are more or less represented. A feature at the Ghent Shows is the specimen plants, and on past occasions fine examples have been seen of Vanilla planifolia, including the variety with variegated foliage, and V. pompona.

The genus Lælia has many well-known species in Central America, the most popular being the Mexican L. anceps; also L. albida, first introduced to European gardens in 1832; L. autumnalis, a pleasing species seen at its best in the late autumn months; and L. rubescens, also known as L. acuminata. Schomburgkia tibicinis was discovered on the highlands of Honduras, where it is plentiful; the Indians make the old hollow stems serve as horns.

Cattleyas are not quite so numerous here as in the more southern parts, but they include the elegant C. citrina, C. labiata, C. Bowringiana, C. granulosa, and C. Skinneri. Several fine Sobralias may be mentioned: S. macrantha, S. xantholeuca, with its several varieties, S. Wilsoniana, and S. valida from the Panama district. A very large number of other species could be mentioned, but the above comparatively brief list will show that the Central American area is particularly rich in attractive Orchids.

BROUGHTONIA SANGUINEA.—This was one of the earliest epiphytal Orchids cultivated in England, it having been grown at Kew Gardens in 1793. It is a native of Jamaica, where it grows upon the old trunks of trees not far from the seashore, often in company with Brassavola nodosa. The flowers are bright crimson-purple with an orange-yellow blotch at the base of the lip.

SPATHOGLOTTIS AUREA.—This species is of considerable interest to both botanists and horticulturists. Its large spoon-like cauline bracts are peculiar to it, and strongly mark its specific character, while the flowers are the largest and most handsomely coloured in the genus. S. aurea was discovered by Thomas Lobb in 1849, when collecting for Messrs. Veitch in Malacca. Only a few plants reached England alive, and they gradually died out after flowering one or two seasons.

GRAMMATOPHYLLUM PAPUANUM.

THE illustration represents a fine specimen of Grammatophyllum papuanum flowering in the collection of Wm. Schmidt, Esq., who kindly sends the following interesting information concerning its history: I found this plant in 1910 near the border of the former German New Guinea and British New Guinea, in the south-east part of that island. I only saw one plant—a huge mass—on a dead giant of the forest near the river a few miles up from the coast, and it was no easy work to get part of that plant down from its lofty position. The plant travelled in a large box on the deck of a small steamer in company with the potatoes of the ship. After a week's journey, I was very much surprised to find that rats had eaten a good part of the plant, preferring it to the potatoes. Nevertheless, I succeeded in bringing the rest home safely and in growing it on. It took seven years before I could enjoy seeing the flowers, and this first spike is to be seen in the photograph. The following year the plant had three fine spikes and developed very much quicker, so that I was able to make three good plants when repotting. This species has the same peculiarity as Renanthera Lowii, developing two kinds of flowers; the first spike had about fifty flowers, including four abnormal ones at the lower end. Mr. Schmidt concludes by saying that he has crossed this remarkable species with the pollen of Cymbidium insigne Sanderi, and has been successful in obtaining some seedlings. These he calls Grammatocymbidiums, and hopes to be able to send us flowers at a later date.

The genus Grammatophyllum was founded by Blume, in 1825, on G. speciosum, commonly known as the Giant Orchid. G. papuanum, J. J. Sm., was described in 1911 (*Bull. Dep. Agric. Ind. Neerl.*), from materials collected at the River Beguwri, in Dutch New Guinea. It was afterwards figured (*Lorentz, N. Guin.*, viii. p. 596, t. 107) from flowers preserved in alcohol, hence the colour markings are not represented. Some idea of the immense size of this plant may be obtained by comparing it with the other plants seen in our reproduced photograph. The flowers are somewhat smaller than those of G. speciosum, but the segments are considerably broader. At the base of the inflorescence are four abnormal flowers, each consisting of two sepals and two petals, the lip being entirely absent.

The Grammatocymbidium seedlings are of considerable horticultural interest, for they may lead to the production of immense Cymbidium-like spikes and still further extend this popular genus. From a botanical point of view the crossing of Grammatophyllum and Cymbidium does not come so much as a surprise, for both genera were classified by Bentham in the subtribe Cymbidieæ. The flowering of these seedlings is being looked forward to with much interest.

GRAMMATOPHYLLUM PAPUANUM FLOWERING IN THE COLLECTION OF WILHELM SCHMIDT, ESQ.

ORCHIDS OF SOUTH AUSTRALIA.

AN important contribution to Orchidology has recently been published in J. M. Black's *Flora of South Australia*. It comprises an enumeration of the Orchids of South Australia by Dr. R. S. Rogers, M.A., an authority whose valuable work has received world-wide recognition. No less than 43 pages are occupied with carefully drawn up descriptions of each species, the localities where they were found growing, and their season of flowering. Additional value to this work is given by the inclusion of nine whole-page plates, containing representations of eleven species, as well as text figures of nine others. It is a most useful reference book and doubtless will be much appreciated by all students of South Australian Orchids.

A total of nineteen genera, all of which are terrestrial, are represented in this State. Of these the genus Dipodium represents the tribe Vandeæ, all the rest being members of the Neottieæ. The genus Dipodium, so named on account of the two stalks, or false caudicles, of the pollinary apparatus, includes about nine members. D. punctatum is a leafless fleshy plant having an extensive system of thick elongated tuberous roots. Calochilus, meaning "beautiful lip," comprises six species, five of which are endemic to Australia. One of them has copper coloured bracts and flowers, and on that account was named C. cupreus by Dr. Rogers. Thelymitra embraces about forty-two species, having Australia apparently as a distributing centre. The name is derived from the Greek for "wearing a woman's head-dress," in allusion to the hood of the column. The segments of the perianth are all similar, the labellum being undifferentiated from the others. Albino forms are said to be not infrequent. T. azurea bears flowers of a deep azure blue. In Microtis, meaning "small ear," the column bears a small wing or auricle on each side of the anther. Nine species have been recorded in Australia, seven being endemic.

The genus Prasophyllum is an important one, some sixty species having been recorded. It has representatives in New Zealand, but otherwise is exclusively Australian. The flowers appear to be reversed, the labellum being uppermost. P. odoratum has strongly perfumed flowers, but Dr. Rogers describes, under the varietal name album, a small plant with smaller flowers than the type, and with fewer pink tints, the flowers in this case being without perfume. The genus Caleana commemorates the name of G. Caley, a collector of New South Wales plants. Four species are known, the flowers have labellum pointing upwards, while the caudicle and viscid disc are absent.

Corysanthes, derived from the Greek for "helmet-shaped flower," and comprising upwards of forty species, has four or five representatives in Australia. In Acianthus, meaning "pointed flower," the dorsal sepal is

often produced into a fine point. A figure of A. caudatus shows the dorsal sepal tapering into a filiform point about 3 cm. long. Lyperanthus, literally "mournful flower," is named in reference to the gloomy colour, this being specially noticeable in L. nigricans, which becomes black when dry.

Caladenia is another important genus comprising nearly sixty species. Of these three or four are reported from New Zealand and fifty-four from Australia. Of the latter all are endemic with the exception of one, C. carnea, which has been reported from Java. "Curiously enough," states Dr. Rogers, "no records have been made from any of the islands intermediate between Java and Australia." The species of Caladenia with long tailed sepals, are commonly known as Spider Orchids. The genus Diuris is endemic to Australia and contains twenty-six valid species. The name is derived from the Greek for two tails, in reference to the lateral sepals. Spiranthes is represented by only a single recorded species—S. australis.

Another genus of importance is Pterostylis, with no less than fifty-five species, forty-three of which are inhabitants of Australia. The flowers are usually green, and popularly called Green-hoods.

AN AMATEUR'S EXPERIENCE.

BY JOSEPHINE R. WALKER.

IN four weeks many things may happen, especially with one's Orchids. Now I find that one of the Vanda cœrulea plants has a fine spike, so perhaps others may follow suit; it has come on very quickly from the first showing. This plant has not flowered before in this country, having come direct from India to the friend who sent it on to us. It is very strong rooting and on a block of wood. Our Vanda roots even cling and grow on the common white wood that the cradle is made of. These plants are getting less water now, in fact everything else is at this season of the year.

The Odontiodas and Odontoglossums seem to be going on very well, rooting, and in many cases throwing flower spikes. One Odontioda Charlesworthii had a spike showing when we got it, but we took it out as we always believe in giving plants a chance of becoming "at home," and now it is throwing a very strong spike from the other side of the bulb, which shows that it means to carry on if possible. We have had four holes bored in the door against which their staging stands so as to allow extra fresh air to circulate around them. My husband likes the heavy coloured and blotched varieties, and I the white ones.

The article by Mr. de Barri Crawshay was absolutely the best yet published in *The Orchid Review*. It shows the great difference in the prices of those days and the present when even small people like ourselves can have the pleasure of some fine hybrids. One of our friends was so pleased

with our Orchids last week that she has gone in for the cult, and will succeed, I am sure, because she is so keen herself. It was the blooms of Læliocattleya eximia, Cattleya Minucia, C. Harrisoniana, and a fine dark variety of C. labiata, that charmed her. And it was the species she was anxious to have a try with, rather ambitious perhaps for a beginner. When my husband and I were staying with these friends a few weeks ago we saw a small greenhouse at the end of a range of glass and against a wall. We decided that if it belonged to us it would be filled with a collection of Lælias and Cattleyas instead of the plants it then contained. It was this conversation that led my friend into taking an interest in the cult, and when she saw our lot, that finally decided the question. So we have bought for her sixty Cattleyas of good sorts, and for the time being are taking the responsibility of being advisers-in-chief, not having enough responsibilities of our own! Anyhow, there is only one genus to deal with, which in our opinion is a vastly different proposition to having everything from Odontoglossums to Dendrobiums under one roof. Certain it is that if we had to make a new start now with only one house we should confine ourselves to whatever genus the house was best adapted for; if it had the possibilities at all I am sure it would be hybrid Odontoglossums and Odontiodas. We have just acquired another fifteen of these beautiful crosses, mainly owing to the splendid progress made by those we already possess.

An awful tragedy has happened. Workmen have been putting some new spouting on the house, and the rain water from these has been diverted to the tanks inside the conservatory. The spouts were given a very liberal coating of creosote, and a few hours later—in the night—there came a deluge of rain. When we opened the conservatory in the morning the odour of creosote was awful, and we had the joyful job of clearing all the tanks and pipes thereto. Luckily it was discovered in time, and we do not appear to have suffered.

We have taken off all the shading from the cool end of the house, and are giving the Odontoglossums and Odontiodas all the light we can. Every piece of glass has been thoroughly washed, inside and out, also an awful undertaking with our weird erection. We do not think that the rays of what little sun we get will now do any harm. The Cattleyas and Læliocattleyas have made very good ripe bulbs, and every one of the fully grown plants has made a sheath. Those which have not bloomed are filling fast, and some of the seedlings with tiny sheaths are also filling. We do not know enough to judge by the colour of the leaves, but some with deep shades of red are marked on the labels albinos crosses, and with these one would expect the foliage to be pale green. Time, however, will prove their true nature.

NEW ORCHIDS.

THE forty-ninth Decade of New Orchids is published in the *Kew Bulletin*, 1922, No. 1. It was left completed by the late Mr. R. A. Rolfe at the time of his death, and represents his last contribution to the study of the Orchidaceæ. The plants described are :—

Agrostophyllum seychellarum. An interesting species from the Seychelles Islands, and which has long been known from fruiting specimens. It appears to be allied to the Ceylon A. zeylanicum. The petal-like character of the lip was remarkable, but was found in five flowers examined.

Catasetum Rothschildii. This species is said to have flowered in the collection of Sir Trevor Lawrence, Bart., in February, 1899, having originally been obtained from the Hon. Walter Rothschild. The flowers are light green, with the inside of the lip buff-yellow.

Microstylis Whitmeei. A novelty from Samoa, and allied to M. Reineckiana, but having much larger flowers.

Bulbophyllum scandens. Remarkable for its stout climbing 4-angled stems, and the absence of pseudobulbs. A native of the Seychelles Islands. Thomasset remarks that it is found climbing rocks and trees, and that the flowers are cream coloured or purple.

Microstylis Thomassetti. From the Seychelles Islands. Endemic. It is stated that a plant in the Calcutta Herbarium collected in Burman is very similar, and may represent the same species, though there are a few differences in the floral structure.

Maxillaria insignis. This novelty is described as being a very large and distinct species, which was introduced by Messrs. Sanders, and flowered at the Royal Botanic Garden, Glasnevin, in May, 1912. The sepals and petals are ivory-white, the former slightly and the latter strongly striped with red-purple, while the lip is dull yellow, with some brown markings on the front lobe, a red-brown suffusion on the side lobes, and a deep yellow crest.

Camaridium vinosum. A species of unrecorded habitat which flowered in the collection of the late Sir Trevor Lawrence in July, 1899.

Cryptophoranthus Lehmannii. A Colombian plant which flowered at Glasnevin in November, 1899, and subsequently at the Zurich Botanic Garden, and in the collection of the Hon. Walter Rothschild. The sepals are heavily blotched with dull purple on a whitish ground, which becomes yellow towards the base of the lateral pair; the petals and lip are yellow, the former more or less spotted with dull purple.

Megaclinium angustum. A species from West Tropical Africa sent to Kew by Mr. J. H. Holland, Curator of the Botanic Garden, Old Calabar, and flowered in the Kew collection in June, 1900. The flowers are almost uniformly lurid purple in colour, a little paler on the dorsal sepal and petals.

NOTES ON FIBRES FOR POTTING.

IN past years Orchid cultivators did not experience any difficulty in obtaining a sufficient supply of fibrous peat. The quality was good, and large blocks of brown fibre, with but little dust, could be procured at a reasonable price. These blocks were broken up into pieces the size of a hen's egg for use when potting fully grown plants, or the fibrous threads were entirely separated and mixed with any other desired material in the case of smaller plants and seedlings. With the cheaper qualities of peat, the block contained a corresponding increase of rhizomes, or thick roots, and these when suitably prepared made excellent drainage material, in the place of crocks. It was, however, found necessary to carefully examine the rhizomes before use, and to place on one side any that contained a milky substance, for those used in this condition generally caused the compost to turn sour and become unfit for the plant. After placing these discarded rhizomes in a dry place for a few weeks in order to exterminate the life and milky substance, they were broken up and used either as drainage or as part of the compost for large plants. Cattleyas, especially, seemed to appreciate these dried rhizomes, for their roots were generally found firmly attached to them.

Most of the text books on Orchid culture were written at a period when peat was practically the only material used, which will explain to amateurs of to-day who study these instructions of the past why other fibres are not mentioned. Since the publication of these books, the supply of peat has become less and less, until at the present time it is almost impossible to procure any good enough for Orchid cultivation. This difficulty of obtaining peat lead to experiments being made with other fibres, and although some of them proved a little disappointing at first, it was found that, when experience had been gained, results quite as good as those with the use of peat were achieved.

Polypodium fibre has been much used, and with successful results when its nature is understood. It is a soft fibre suitable for young plants, and when mixed with other materials. It should never be used alone for potting large Cattleyas, being too easily compressed into a solid mass that quickly becomes waterlogged, and thus entirely unfit for roots to penetrate. Nor is it suitable for forming the surface of any potting mixture, as it soon becomes slimy and then not only greatly impedes, but frequently entirely stops the necessary access of air to the roots. When mixed with other fibres, or when covered with a layer of sphagnum moss it is much less liable to become slimy.

During recent years a fern fibre from Wales has been widely distributed under the name A.I. fibre. It is fairly tough and will frequently last in use

for two or three years. For young seedlings and other plants with a delicate root system the finer grades are especially suitable. Sphagnum moss can be chopped up with it or else placed in tufts near the rim of the pot. With small pots that are liable to dry quickly, sphagnum moss forms a good guide, for it keeps green so long as the compost remains moist, and turns whitish when dry.

The amateur who procures but one bag of fibre has not much opportunity of selecting any desired grade, and he is often compelled to use a fibre that is much too coarse for his small seedlings, or perhaps too fine and soft for the plants of flowering size. It is quite evident that the owner of a large collection, who buys many bags at a time has greater opportunities in this respect. But whatever the fibre may be, it is always desirable to thoroughly moisten it before use. Not only can it then be more readily pulled to pieces and prepared, but it is rendered far more pliable and thus the more easily inserted in the pots. If the fibre contains much dust it is advisable to beat it out, or at least the greater portion of it, before applying any water. In gardens were large quantitites are used the blocks of osmunda fibre are run through a chaff-cutter, and some of the flat slices thus produced come in useful for the top layer when potting large plants.

CULTURE OF CYPRIPEDIUM FAIRRIEANUM.

THE last number of the Royal Horticultural Society's Journal (vol. xlvii., pts. 2 and 3) contains several articles of considerable interest and value to horticulturists. Under the heading of Commonplace Notes on p. 197, Mr. W. H. St. Quintin contributes details of a method of cultivating Cypripedium Fairrieanum, which he and his late gardener, Mr. F. Puddle, found very successful. The method consists of using two distinct layers of compost. The lower one is made up of two parts Osmunda fibre or peat, one part calcareous loam, one part silver sand, and half a part crushed crocks. The upper layer is composed of two parts Osmunda fibre, one part Kent loam, two parts Sphagnum, and one part silver sand. Experience showed that the plants grew best with Sphagnum on the surface, but as this would not grow in contact with calcareous loam, the two layers of different compost were used. The limey loam was tried in various proportions, and the conclusion arrived at was that though this species is decidedly a lime-lover, one part was a sufficient proportion, and, indeed, better than a larger one. After potting, the surface of the compost is kept moist with a sprayer until the plants become established, when they are watered moderately at all times. The summer temperature ranged between 65 and 75 degrs. and that of the winter between 55 and 65 degrs., but it is thought that the imported plants were better when kept in the Odontoglossum house at a rather lower temperature in winter.

PHALÆNOPSIS VEITCHIANA.

THIS very rare Phalænopsis has recently flowered in the collection of A. C. Burrage, Esq., Boston, Mass., U.S.A. In sending a photograph of it, Mr. George I'Anson remarks that it is the only plant of its kind in America, and that he has only seen two in England. P. Veitchiana first appeared as a solitary specimen among one of Messrs. Veitch's importations prior to 1872, in which year it flowered with them for the first time. It was described by H. G. Reichenbach (*Gard. Chron.* 1872, *p.* 935), who suspected it to be a natural hybrid between P. rosea and P. Schilleriana, both natives of the Philippines. He stated that "the leaves look like those of an exceedingly pale marked P. Schilleriana; it is best to have oblique light in order to recognise the marking." And after giving details of the flowers he remarked, "I feel happy to dedicate this very great curiosity to Harry J. Veitch, Esq., whose zeal for the introduction of rare and new plants appear to increase from year to year."

Messrs. Veitch, in their *Orchid Manual*, describe the flowers as two inches in diameter, sepals white with a flush of light purple below the middle; petals sub-rhomboidal, broader than the sepals, white, with a deeper purple stain; the side lobes of the lip broadly spathulate, incurved, the basal half white spotted with red, the apical half crimson-purple; the front lobe somewhat lyre-shaped, with two straight, pointed teeth at the apex, crimson-purple; column purplish.

The above remained the only plant till 1883, when a second was imported by Messrs. Low & Co. This differed but little, except in the shorter, thicker, apical teeth of the front lobe of the labellum. Reichenbach named this variety P. Veitchiana brachyodon (*Gard. Chron.* 1884, *p.* 271), because of the great stoutness of these teeth. Messrs. Low & Co. state that the plant on arrival was set aside and marked owing to its peculiar appearance. The leaves resembled those of P. leucorrhoda, lightly mottled on the upper surface, and with a light purple tinge underneath. Imported leaf 6 inches long and 2½ wide. Roots round. The plant had a very sturdy habit. Flower spike like a very strong rosea, 15 inches high, standing very erect. Flowers well thrown out from the spike.

Mr. I'Anson also sends a photograph of P. Stuartiana, the branched inflorescence carrying the unusually large number of eighty-two flowers.

RENANTHERA PULCHELLA.—A very pretty plant which flowered in the establishment of MM. A. A. Peeters & Cie., Brussels, in August, 1913. It is believed to have come as a single plant in an importation of R. Imschootiana, but the flowers are only half as large, and different in structure. In colour yellow, with crimson on the lip.

HOLLAND PARK SHOW.

THE Great Autumn Meeting of the Royal Horticultural Society was held at the Holland Park Skating Rink on October 3rd, 4th, 5th and 6th. The following members of the Orchid Committee were present:—Sir Jeremiah Colman, Bart. (in the chair), Prince Shimadzu, Messrs. J. O'Brien (hon. sec.), Fred. J. Hanbury, J. Cypher, R. Brooman-White, E. R. Ashton, A. McBean, W. J. Kaye, S. W. Flory, W. H. Hatcher, C. H. Curtis, C. J. Lucas, H. G. Alexander, Richd. G. Thwaites, J. Wilson Potter, Fred. K. Sander, Pantia Ralli, Stuart Low, Gurney Wilson, H. T. Pitt, J. E. Shill and A. Dye.

FIRST-CLASS CERTIFICATE.

Brassocattlælia Golden Crown var. Prince Humbert (Blc. Joan × C. Venus), from Messrs. Charlesworth & Co. An excellent flower of large size, the sepals and petals buff yellow and having a golden overtint; the expansive labellum ruby crimson, prettily crimped round the entire margin, and the throat golden.

AWARDS OF MERIT.

Miltonia Warscewiczii var. Rosslyn, from Messrs. Charlesworth & Co. This superb variety carried a spike of fifteen flowers, the segments larger than usual, the sepals and petals crimson-brown, tipped with yellow, the lip of rich crimson-purple and having a varnished-like zone near the column.

Brassocattleya Viscount Toda (C. Rhoda × Bc. Ilene), from Messrs. Flory & Black. A very pleasing flower in which the sepals and petals are light buff suffused with rose, the latter tint being more intense on the petals; the expansive labellum deep rosy-mauve, with the isthmus bright yellow.

Cattleya Desdemona (Fabia × Thurgoodiana), from Messrs. Charlesworth & Co. A large bold flower of rosy-mauve colour, the fleshy petals flatly displayed, the wide lip prettily crimped, margined with rose, and the throat of orange-gold colour.

Oncidioda Medina (C. Noezliana × On. corynephorum), from Messrs. Charlesworth & Co. A very pleasing hybrid with a spike of 36 rose tinted flowers blotched with red.

Læliocattleya Mrs. Medo (C. Venus × Lc. luminosa), from Messrs. Stuart Low & Co. A very attractive flower with yellow sepals and petals, the broad and prettily crimped labellum having the front lobe of ruby-purple colour.

GROUPS.

Sir Jeremiah Colman, Bart., Gatton Park, Surrey (gr. Mr. Collier), was awarded a Silver Lindley Medal for an excellent collection of rare species, among them being Cirrhopetalum miniatum, with reddish flowers, the singular Catasetum discolor, Angræcum distichum, and several fine

varieties of Dendrobium Phalænopsis. A choice selection of hybrids included a grand specimen of Cattleya Portia, C. Lady Veitch, pure-white, the Gatton Park variety of C. Browniæ, C. Brenda alba, and some blue varieties of other crosses. Brassocattleya Mrs. J. C. Hurst alba carried white flowers with a few purple spots on the back of the trumpet-shaped labellum. One of the prettiest of Cypripediums was seen in Mrs. Dora Jameson, and among the Odontiodas was a choice one named Irene. Brightly coloured areas were produced by masses of Spathoglottis zebrina (Fortunei × plicata), and along the front were several interesting Masdevallias and species of the Stelis genus.

Messrs. Charlesworth & Co. received a Gold Medal for an excellent group in which the bold Cattleya Desdemona and Blc. Golden Crown were in prominent positions. The Odontoglossums included several choice varieties of the albino and xanthotic hybrids, the long sprays being very effective. The background was composed of well-flowered varieties of the large type of Cattleyas, and along the front were some interesting novelties, including yellow varieties of Odontonias and reddish coloured Sophronitis hybrids. Miltonioda Lilian carried rose-red flowers, and near to it was the now scarce Cypripedium Parishii and Acropera Loddigesii. A handsome Cypripedium was seen in J. H. Veitch, while Cœlogyne Mooreana with its white flowers, and Platyclinis filiformis with thread-like spikes of minute golden flowers, came in for much attention. Many richly-coloured varieties of Læliocattleyas were also staged.

Messrs. Sanders were awarded a Silver Cup for an extensive exhibit, the background being composed of many specimen Cypripediums, while in front were some of the smaller growing kinds, such as Godefroyæ, Fairrieanum and concolor. In prominent positions were fine forms of Vanda cœrulea and the blue-lipped Zygopetalum Gautieri. A pleasing Læliocattleya was seen in Cremona alba, with white sepals and petals and an orange-yellow throat; Lc. Lilias carried yellow flowers, and there were good forms of the well-known Cattleya Hardyana alba. Among the curious plants were some fine Stanhopeas and Oncidium Papilio. A fine flower was seen in Cattleya Kienastiana Sanderæ, also in C. Lady Veitch and Brassocattleya Enchantress.

Messrs. Stuart Low & Co. received a Silver Cup for an attractive exhibit in which were several handsome Cattleya hybrids, among them being C. Suavior var. Glory (intermedia Aquinii × Mendelii), the petals being flushed with bright purple. In the centre was a superb plant of Cattleya Loddigesii alba, and C. Iris var. Buttercup with rich yellow flowers. Rarities were seen in Acropera Loddigesii, Miltonia Binottii and Angræcums Scottianum and distichum. The F.C.C. variety of Od. Woodroffeæ and several handsome Brassocattleyas were well staged. Among

the smaller growing species were Lælia Dayana delicata, L. præstans and L. Crashleyana alba.

Messrs. Flory & Black received a Silver Flora Medal for an excellent selection of Cattleyas. In C. Mimosa the flowers were of canary-yellow colour, the elongated lip reddish-crimson. A handsome hybrid between C. Kienastiana and C. Dowiana was named Dr. G. G. Macdonald, and the varieties of C. Hardyana alba and C. Rhoda were in fine form. Among the Brassocattleyas were large flowered varieties of Olympus, as well as Bc. Rosita, this having a very pretty rose suffusion on a buff ground. Several Sophronitis hybrids were staged, the best being the new Slc. Cytherea and Slc. Antiope.

Messrs. Cypher & Sons put up a most charming group of Foliage Plants and Orchids, a Gold Medal being awarded. It included a superb example of Cattleya Mrs. Pitt with a tall spike of twelve flowers, C. Peetersii alba, a pleasing variety with purple on the lip, good examples of C. Fabia, the pure white C. Astron, and an elegant variety of Lc. Epicaste. In other effective positions were several Cypripediums, of which Rossettii and Lord Derby were unusually well flowered, and long sprays of yellow Oncidiums.

Messrs. Mansell and Hatcher were awarded a Silver Flora Medal for an extensive exhibit containing several fine varieties of Cattleya Iris, C. Prince John, and C. Eleanore, the latter with a richly-coloured lip. Brassocattleya Heatherwood and several fine Læliocattleyas showed to advantage, while in other places were various Cypripediums, including Rossetti and Maudiæ. A feature of this group was the many well-flowered plants of Odontoglossum grande.

ROYAL HORTICULTURAL SOCIETY.

October 17th, 1922.

MEMBERS of the Orchid Committee present: Sir Jeremiah Colman, Bart (in the chair), Messrs. Jas. O'Brien (hon. sec.), Gurney Wilson, C. J. Lucas, Fred. K. Sander, A. Dye, S. W. Flory, J. E. Shill, H. T. Pitt, J. Barker, C. H. Curtis, A. McBean, T. Armstrong, E. R. Ashton, Pantia Ralli, J. Wilson Potter, Fred. J. Hanbury, and Stuart H. Low.

AWARDS OF MERIT.

Miltonia spectabilis extraria, from Messrs. Sanders. A charming variety of this Brazilian species which may be said to belong to the bicolor section. The flower is light greenish-white, except for a large rich purple blotch on the central area of the lip, and with the column wings similarly coloured.

Odontoglossum St. George var. solum (Alexandrina × eximium), from Messrs. A. & J. McBean. An elegant and very attractive variety in which the tall spike carried six large flowers blotched with rich crimson-purple, and having lighter areas of rose tint.

Brassocattleya Dr. G. G. MacDonald, Langley var. (Bc. Ilene × C. Peetersii), from Messrs. Flory & Black. One of the best of the Brassavola crosses, in which the large flower is of model shape and proportions, of a pleasing rose-pink tint, the wide labellum prettily fringed, and with an orange-yellow centre. The spike carried two such flowers.

Læliocattleya St. George var. Victory (C. Fabia × Lc. St. Gothard), from Messrs. Stuart Low & Co. This plant carried two large and handsome flowers in which the immense labellum constituted the chief point of attraction, being of rich ruby crimson with a narrow rose-coloured edge.

GROUPS AND OTHER EXHIBITS.

Messrs. Sanders were awarded a Silver Banksian Medal for a group containing varieties of Cattleya Hardyana, a fine form of Vanda cœrulea carrying a spike of 12 flowers, Lc. Glory, with bright yellow flowers, the pretty Lc. Carmencita, as well as Bc. Ilene conspicua, Cattleya Peetersii alba and Oncidium tigrinum. Among the Cypripediums were fine varieties of Godefroyæ and Maudiæ coloratum.

Sir Jeremiah Colman, Bart., Gatton Park, exhibited Odontioda James O'Brien (Oda. Oakwoodiensis × Oda. Chanticler), in which the spike carried three large flowers of thick texture and handsomely blotched with crimson-brown on a whitish ground. The wide lip has a prominent bright yellow crest.

His Grace the Duke of Marlborough, Blenheim Palace, exhibited Cattleya Sylvia, Blenheim var., the spike bearing three very pretty flowers in which the segments had a delicate venation of lighter tint. Also Læliocattleya Cornelius, with a spike of four large flowers, the well-developed labellum of bright purple, and the throat yellow.

Pantia Ralli, Esq., Ashstead Park, Surrey, staged Odontoglossum Zenith, a promising seedling with round flowers neatly blotched.

Messrs. Flory & Black exhibited Potinara Royal Purple, of bright coloration, the handsome Blc. Bella with two immense flowers, Sophrocattleya S. W. Flory, rich crimson-red, and Od. Ursus, a promising hybrid between amabile and Georgius Rex.

Messrs. J. & A. McBean staged Cattleya Ænaes, of golden-orange colour with a ruby-crimson lip, the new Lc. Profusion (C. Hardyana × Lc. Serbia), with a grand purple lip and Od. Laurentia var. excellens, carrying a spike of six round flowers having dull reddish blotching.

Messrs. Stuart Low & Co. staged Cattleya Vuldow, an elegant novelty obtained by crossing Vulcan and aurea.

MANCHESTER ORCHID SOCIETY.

September 7th, 1922.

THIS meeting was held at Preston in the Horticultural Section of the Royal Lancashire Agricultural Show. Members of the Committee present:—Rev. J. Crombleholme (in the chair), Messrs. B. J. Beckton, A. Burns, A. Coningsby, A. T. Cusson, J. Cypher, A G. Ellwood, W. Giles, Dr. R. N. Hartley, J. Howes, J. Jackson, A. Keeling, J. Lupton, D. McLeod E. W. Thompson, and H. Arthur (secretary).

The Rev. J. Crombleholme was awarded a Silver-gilt Medal for a group of Cypripediums, including nine plants of C. leyburnense magnificum. A similar award was given to J. McCartney, Esq., for a fine exhibit of choice Cattleyas, etc.

Mrs. Bruce and Miss Wrigley were awarded a Silver Medal for a group of fifteen plants of Cypripedium Maudiæ, as well as Catasetum splendens Lindenii and Cycnoches chlorochilon. A Silver Medal was given to Dr. R. N. Hartley for an attractive exhibit of Cypripediums and Cattleyas. Various Cattleyas and fine Cypripediums were also staged by A. T. Cussons, Esq.

Messrs. Mansell & Hatcher staged a group to which a Silver-gilt Medal was awarded. Messrs. Charlesworth & Co. exhibited choice Odontoglossums.

FIRST-CLASS CERTIFICATES.

Blc. maculata (Bc. The Baroness × Lc. Thyone), C. Venus var. Grand Monarch, and Lc. Golden Sunset, from S. Gratrix, Esq.

Lc. Elvasea (Lc. Elva × Lc. Rubens) and Lc. Sargon majestica; from P. Smith, Esq.

Cyp. Albion; from Mrs. Gratrix.

AWARDS OF MERIT.

Odm. St. George var. Eileen and O. amabile The Prince; from A. Hanmer, Esq.

Cattleya Æneas and C. Fazeana; from Messrs. Keeling & Sons.

Cattleya Gaskelliana pallens; from Dr. R. N. Hartley.

Cattleya Hardyana var. Ruby; from Messrs. Stuart Low & Co.

AWARD OF APPRECIATION, FIRST-CLASS.

Odontoglossum St. George var. Ruby; from A. Hanmer, Esq.

CULTURAL CERTIFICATES.

Mr. W. Giles for Odm. crispum xanthotes, Edgemoor var.

Mr. J. Howes for Cattleya Venus var. Grand Monarch.

Mr. C. H. Potts for Odm. amabile and Cœlia macrostachya.

Mr. W. Stewart for Pachystoma Thomsoniana.

Mr. E. W. Thompson for Oncidium macranthum nanum.

September 21*st*, 1922.

Members of the Committee present:—Rev. J. Crombleholme (in the chair), Messrs. B. J. Beckton, J Birchenall, A. Coningsby, A. T. Cussons, J. Cyper, A. G. Ellwood, J. Evans, Dr. R. N. Hartley, J. Howes, W. M. Jackson, A. Keeling, D. Mcleod, E. W. Thompson, J. Whitham and H. Arthur (secretary).

S. Gratrix, Esq., was awarded a Silver-gilt Medal for an excellent group of Cattleyas and Cypripediums. P. Smith, Esq., staged Læliocattleya General Maude var. Victory, a very fine flower to which a Silver-gilt Medal was awarded.

Messrs. Cypher & Sons, received a Silver Medal for an interesting group containing fine species and hybrids. Messrs. Keeling & Sons, staged Cattleya Snowflake and other albinos.

FIRST-CLASS CERTIFICATE.

Blc. Golden Crown var. Diadem (Blc. Joan × C. Venus), the largest and best coloured form of this hybrid; from P. Smith, Esq.

AWARDS OF MERIT.

Cattleya Abekeniæ var. Aurora, Cattleya Hardyana var. Albion, Blc. Asmodia, West Point var.; from S. Gratrix, Esq.

CULTURAL CERTIFICATE.

Mr. J. Howes for Cattleya Soulange var. Monarch.

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October 5*th*, 1922.

Members of the Committee present:—Rev J. Crombleholme (in the chair), Messrs. B. J. Beckton, A. Burns, J. Evans, W. Giles, A. Hanmer, J. Howes, J. Jackson, A. Keeling, D. McLeod, E. W. Thompson and H. Arthur (secretary). Mr. A. McBean was invited to sit with the Committee.

S. Gratrix, Esq., was awarded a Gold Medal for a grand group of Cattleyas and choice hybrids, several of which gained awards.

Mrs. Bruce & Miss Wrigley were also awarded a Gold Medal for a group composed principally of Od. grande, including the variety aureum, and over twenty plants of Epidendrum vitellinum autumnale, as well as Cymbidium erythrostylum.

A Hanmer, Esq., Buxton, received a Large Silver Medal for Odontoglossums in variety. A. T. Cussons, Esq., Prestwich, was awarded a Silver Medal for a fine exhibit of Cypripediums.

B. J. Beckton, Esq., staged various Cypripediums, the pretty Cirrhopetalum Medusæ, and Miltonia spectabilis Moreliana. Messrs. A. J. Keeling & Son exhibited the rare Cirrhopetalum Rothschildianum and other choice Orchids.

(*To be continued.*)

THE ORCHID REVIEW.

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NOTES.

IMPORTING ORCHIDS IN 1832.—After describing the beautiful Angræcum eburneum in the *Botanical Register* for 1832, Lindley stated that it grows slowly, but without manifesting the smallest disposition to branch, or provide means for propagating. "It is very much to be regretted," he added, "that some more efficient means are not taken to procure the plants of this description, which abound in all the tropical parts of the East. They are very tenacious of life, and require no care in collecting, it being only necessary to strip them off the trees on which they grow, and to suspend them in the cabin, never watering them, but moistening them occasionally with a wet sponge. Captains of ships touching at the Isle of France might succeed in importing them without difficulty; and yet of the numerous species figured by Du Petit Thouars, not more than three or four have ever been seen in our gardens. The only precaution that requires to be taken in importing them is that they should not be over-watered; if this is done, they are sure to die; it would be much better to give them no water whatever. They should also, if possible, be collected in the dry season, at which period they are naturally in a state of torpor."

CIRRHOPETALUM ROTHSCHILDIANUM.—The *Gardeners' Chronicle* of October 28th contains some interesting notes on various species of Cirrhopetalum by Mr. Jas. O'Brien, V.M.H. Concerning the history of C. Rothschildianum, he remarks: "Looking round Messrs. Stevens' rooms in Covent Garden in 1892, I saw a small, battered box containing a bunch of nearly dead Orchids of several species, and which were said to have been collected by an explorer in the hills above Darjeeling. I told the faithful 'Charles,' that friend of all the old-time Orchidists, to buy the lot for me. He did so, at a very reasonable price, and I passed the plants on to the Hon. Walter Rothschild (now Lord Rothschild), and, in the course of time some plants became established, among them being the finest of all Cirrhopetalums, which I named and described in the *Gardeners' Chronicle*, November 23rd, 1895, p. 608." The flowers of this species measure five

inches long, and the united sepals are about an inch broad at the base. The colour is bright red-purple on a pale yellow ground. The sepals and petals are margined with long plume-like appendages which flutter in the slightest breeze. It received a First-class Certificate, R.H.S., October 15th, 1895, a high honour for a Cirrhopetalum.

ONCIDIUM TETRAPETALUM.—This pretty species is a native of the West Indies and adjacent countries on the American continent. It has been frequently sent to English gardens, but, like most of the Oncidiums with equitant foliage, has never been successfully cultivated. It appears to vary in size as well as in the colour of the flowers. A narrow-leaved variety found by Lobb in New Granda is mentioned by Lindley as being in Sir W. Hooker's herbarium. In 1805 Willdenow described this plant as Oncidium tetrapetalum (Sp. Pl. iv. 112), which name is maintained at Kew. But Fawcett and Rendle in their *Orchids of Jamaica*, 1910, consider it identical with the plant described in 1753 by Linnæus as Epidendrum guttatum, and on that account they have formed the new combination Oncidium guttatum, thus maintaining the earliest specific name. A coloured drawing and dried flower of it have been received from R. Nelson Musgrove, Esq., Nassau, Bahamas, who states that his plant was found on the island of Abaco growing in the coppice, in rather a shady locality. It is now being cultivated on a small block, with some native wood and moss about the roots, and kept continually moist in a shady place.

PHALÆNOPSIS LINDENII.—This rare species was originally described in 1895 by Mr. Loher (*Journ. des Orch, vi. p.* 103), who discovered it in the Philippines. The exact locality was not stated, but he remarked that no other Phalænopsis grows in the place where it was found. The leaves are silvery-green and tessellated, like those of P. Schilleriana, but more pointed, while the flowers resemble those of P. rosea, hence it was at first thought to be a natural hybrid between them, and thus a form of P. Veitchiana. Subsequent consideration, however, disposed of this opinion, and led to its specific character being recognised. A fine example has recently flowered in the collection of A. C. Burrage, Esq., Boston, Mass., U.S.A., and from his able grower, Mr. Geo. I'Anson. we have received a photograph showing how distinct it is. The flowers are larger than those of P. rosea, the segments broader, while the front lobe of the lip is nearly orbicular and without any trace of the anchor-like appendages seen in P. Veitchiana. The flowers are whitish suffused with light rose, and with a few rose-coloured dots at the base of the sepals and petals. The front lobe of the lip is amethyst-rose at the apex and with five to seven radiating lines. The inflorescence is not branched.

MILTONIA SPECTABILIS.

OUR illustration is of two distinct varieties of Miltonia spectabilis. The flower on the left is whitish, the lip lined and stained with purple, while on the right is the variety Moreliana, in which the sepals and petals are deep-plum-purple and the lip purple with darker veining. M. spectabilis was sent from Brazil as long ago as 1835 to the Birmingham Botanical and Horticultural Society, and flowered in Messrs. Loddiges' nursery at Hackney, in 1837. The variety Moreliana was described in 1851,

MILTONIA SPECTABILIS. M. SPECTABILIS MORELIANA.

and named after M. Morel, of St. Mandé, near Paris, to whom it had been sent some five years earlier by a Brazilian correspondent.

Among other distinct varieties that have appeared are atrorubens, with almost blackish-purple sepals and petals: radians, in which the white flower has crimson-purple radiating lines at the base of the lip; virginalis, somewhat similar to the preceding, but the markings on the lip consist of a crimson-purple blotch; bicolor, in which the sepals and petals are white, while the lip has a purple blotch covering nearly two-thirds of its area; lineata, with eight narrow crimson-purple nerves extending beyond the basal blotch nearly to the apex; rosea, with the sepals and petals flushed with light rose, and the lip nearly like the type; and William's, flowers white with six club-shaped purple rays on the disc of the lip.

Interest in this species has been again awakened by the elegant variety called extraria which Messrs. Sanders exhibited at the meeting of the Royal Horticultural Society on October 17th, when it received an Award of Merit. The flower of this is greenish white, the lip having a large crimson-purple blotch on the central area, and a zone of similar colour at the apex of the column.

Four natural hybrids of this species are known. They are M. leucoglossa (spectabilis × candida), M. Bluntii (spectabilis × Clowesii), M. festiva (spectabilis × flavescens), and M. Cogniauxiæ (spectabilis × Regnelii). In the days when blotched varieties of Odontoglossum crispum were fetching enormous prices, many attempts were made to produce a hybrid between M. spectabilis and O. crispum, but no success was achieved. It is just possible that one day we may see such a hybrid, for the art of seed-raising has progressed considerably since the time when blotched crispums were in demand. The nearest approach to a hybrid of this kind was produced by Messrs. Charlesworth in Odontonia Lucilia (M. spectabilis × O. cirrhosum), which first flowered in 1914, and was figured in the *Orchid World*, vol. iv., p. 125.

INDIAN ORCHIDS.

AT the forthcoming Ghent Quinquennial Exhibition special prizes will be awarded for Indian Orchids. Many of our best-known species have as their natural habitat the vast country of India, and, as the following selection will show, they are plants of considerable importance in the horticultural world.

A general favourite, and one which almost every amateur has had in his collection at one time or another, is Cypripedium insigne, with its varieties too numerous to mention. Another member of the genus that has achieved much fame as the long-lost Orchid is Cypripedium Fairrieanum. It is a charming little flower, and one that is not seen so frequently as it should be. In Cypripedium venustum there exists a North Indian species that was much esteemed by our early-day amateurs; it is the subject of one of the coloured plates in Warner's *Select Orchidaceous Plants* (t. 24).

Some idea of the wealth of the Orchid flora of India may be obtained by considering the numerous Dendrobiums that have been discovered. But few plants have enjoyed greater popularity than D. nobile, with its many coloured, and even white, varieties. There is also D. aureum, sometimes called D. heterocarpum, which is the parent of several brightly coloured hybrids, and such handsome species as D. densiflorum, Farmeri, and Devonianum. D. Wardianum is represented by two distinct forms, one

from Assam, with comparatively short and slender stems, and the other from Burmah, with long stout stems that yield larger flowers.

Cœlogyne cristata, known to every amateur, was discovered by Wallich, nearly a century ago, in the lower Himalayan Zone. When it flowered in England, in 1841, probably for the first time, the Horticultural Society of London gave it a Knightian Medal. Aërides odoratum is also an interesting plant, the more so because it was upon this species that the genus was founded by Loureiro as long ago as 1790. Aërides crispum is a native of the extreme south of India, where it was discovered by Wallich in the early part of the nineteenth century, although it was not introduced into English gardens until many years later. Aërides multiflorum is the most widely distributed of all the East Indian Orchids. It was discovered by Dr. Roxburgh, and some years later, in 1837, flowered in the nursery of Messrs. Loddiges, by whom it was named A. affine.

Many Saccolabiums inhabit British India. S. bellinum is one of the best known; it was discovered by Boxall in Burmah, and introduced by Messrs. Low & Co. Vanda Roxburgh was named in compliment to Dr. Wm. Roxburgh, one of the earliest of Indian botanists, and Director of the Botanic Garden at Calcutta from 1797 to 1814. The genus was founded upon this species, which was the first Vanda to be introduced into British gardens. It was cultivated by Sir Joseph Banks, and first flowered with him in the autumn of 1819.

Vanda cœrulea was discovered by Wm. Griffith in November, 1837, on the Khasia hills, and it has ever since been regarded as one of the finest of Orchids, notwithstanding the difficulties regarding its cultivation. It also inhabits Assam and Burmah, whence numerous specimens have been sent to amateurs and trade growers in all parts of the world.

ANGRÆCUM PELLUCIDUM.—Dr. Lindley remarked of this Orchid that its flowers are as delicate and transparent as if they were flakes of snow fixed by frost in the very act of melting: each part of the lip is studded and bordered with little crystaline elevations, and the whole fabric of the blossom is as fragile as thin plates of glass.

GHENT QUINQUENNIAL EXHIBITION, 1923.—Several important meetings have recently been held on matters concerning the forthcoming Horticultural Exhibition at Ghent. Preparations for decorating the two railway stations are well advanced, and arrangements have been made with M. Van Werveke, the curator of the Archæological Museum, for visitors to the exhibition to view the numerous objects of interest in the city. In addition to large numbers of the rarest and finest plants cultivated in Belgium, there will be sections devoted to France, England, and Holland.

THE ASHTEAD PARK COLLECTION.

ANYONE travelling through the South of England cannot fail to notice the beautiful estates with their fine mansions and noble trees. On the present occasion it is Ashstead Park, Surrey, that particularly claims our attention, for it is the seat of Pantia Ralli, Esq., a well-known connoisseur of Orchids and the owner of a most extensive collection. As the range of glasshouses is situated at some little distance from the mansion, it is necessary to undertake the pleasurable task of traversing the surrounding deer park, extending to 140 acres, in order to view the plants.

The latest addition to the range of Orchid houses is a large span-roof house 60 feet long and 21 feet wide. It is heated by four rows of hot-water pipes on each side and three rows under the central staging. The paths are made of cinder ash, which is an excellent moisture holding material, and the walls supporting the stages are of porous bricks, those of the upper row each having a cavity in which water remains for some time after damping down. Porous tiles are arranged over the hot-water pipes, and when damped assist in maintaining genial atmosphere, as well as preventing any direct heat from reaching the plants. Lath roller blinds, erected about nine inches above the sash-bars, are used for shading. This house is in every way a model one, and the whole of the 2,200 Cattleyas which it contains are fine examples of cultivation. The potting compost consists of a mixture of black A.1. fibre and Osmunda, which is surfaced with a layer of coarse red A.1. fibre, the whole being pressed very tightly into the pots, and finished off with a few lumps of sphagnum moss tucked in near the edge as a guide when applying water to the plants.

Opposite the entrance door are several grand specimens of Lælio-cattleya Schrœderæ, the bulbs and leaves measuring about three feet in height, and showing much evidence of the L. purpurata contained in the parentage. Just beneath them are several hybrids in full flower, representing some of the earliest crosses that were effected in this collection. Passing alongside the central staging many fine plants are seen of C. Maggie Raphael alba, C. Fabia alba and C. Harold, the latter represented by Fowler's variety, white, with purple blotch on the lip. On the top row are several large plants of C. Portia, one of the early-day hybrids, but of interest because they were raised in this garden from specially selected parents. Among the varieties of C. Trianæ are Empress of India, unfortunately a bad grower, The Premier, Goliath, Broomhill variety, still regarded as one of the best, Mrs. de B. Crawshay, and one called Sir Douglas Haig, which was imported years ago but never flowered until the period of the war. There are several fine forms of C. Mendelii, including the varieties White Queen and Memoria J. McBean. During the autumn months some

ASHTEAD PARK, SURREY.

excellent white forms of C. labiata are to be seen. They include most of the well-known varieties, and it may be mentioned that one called The Sultan possesses a strong constitution. C. Gaskelliana alba is represented by a nice little batch of home-raised plants, and C. Fabia has been produced by crossing aurea with labiata The Sultan, resulting in a flower having white sepals and petals and an orange-yellow area in the middle of the lip.

Yellow-flowering hybrids are great favourites with Mr. Pantia Ralli, and among the Læliocattleyas are Golden Guinea (Lc. Myra × C. aurea), which

flowered this year for the first time, Lc. Aureole (C. Iris × Lc. luminosa), a fine strain raised here from yellow-flowering parents, and Lc. Canary II., produced by crossing C. Fabia with Lc. Thyone, the flowers are clear yellow, and it was awarded a Preliminary Certificate when first exhibited at the R.H.S., and last year given an Award of Merit. Lc. Thyone is well represented by a flower with golden coloured segments, and there are some remarkably fine varieties of C. Iris and C. Venus. Cattleya Antiope yields flowers of an old gold tint with an effective purple coloured lip. Several albino Cattleyas must not be passed over, they are C. Lady Veitch, a fine variety of C. Everest, named during the present year, C. Cowaniæ, of excellent form, and many crosses of albino varieties, whose characters remain to be proved later on.

A particularly fine hybrid is to be seen in Læliocattleya Excelsior (C. Mendelii Colossus × Lc. Canhamiana alba), the Ashstead Park variety of which obtained a First-class Certificate when exhibited at the Royal Horticultural Society, May 20th, 1919, and The Globe variety a similar certificate just seven days later. The former has broad white segments, with the front lobe of the lip rosy purple, while in the latter variety the petals are marked with a broad lilac-mauve band up the centre. These were the two first seedlings to flower of the batch that was raised in this collection; they have not been surpassed in beauty by others that have since reached maturity. Cattleya Mossiæ has a very poor constitution, and on that account most of the fine varieties of former days have passed away. In this collection there are, however, a few plants worthy of notice, among them being C. Mossiæ Sea Foam, with its crisped and wave-like lip of milky white colour. It came from the collection of the late Mr. J. Gurney Fowler in rather a poor state, but after being nursed in sphagnum moss is now recovering, and has been divided into three nice little plants. In a corner of this house are a dozen or more Cattleyas that have been fertilised with other good things.

Brassocattleyas are much in evidence, and comprise the elegant Bc. Cliftonii "The Globe," figured in the *Orchid World*, vol. v., page 226, also the well-known magnifica variety of the same hybrid, and Bc. Olympus, a gorgeous flower having C. Hardyana in its parentage. Coming to more complex hybrids, there is Blc. The Baroness, F.C.C., R.H.S., August 26th, 1913, and Blc. Thyone (Bc. Mrs. J. Leeman × Lc. Thyone) of orange-yellow colour, both of which receive much appreciation on account of their wonderful colour. Paintings are preserved of many of the finest hybrids, and it must be said that they show a very high standard of excellence. That of Lc. Mrs. Temple var. Dreadnought depicts a flower with round, erect petals and an immense lip; the plant was in poor condition when obtained, but has since been divided into three, and may yield still finer flowers.

Cattleya Empress Frederick is always a pleasing hybrid, and here is to be seen the variety Avia Clifton, which obtained an Award of Merit, R.H.S., October 21st, 1913, when exhibited by Mr. Ralli. A similar award was obtained three years later for C. Venus var. Victrix, a magnificent flower of golden buff tints, and a third for Lc. Soulange, Ralli's variety, shown at Holland Park last summer; in this the petals are set in upright style, and the intense purple lip is unusually well developed. The elegant Brasso-cattleya Menda, which obtained a First-class Certificate, February 2nd, 1913, and was figured in the *Orchid World*, iii., p. 138, is now a fine specimen. It was obtained by crossing white varieties of C. labiata and Bc. Digbyano-Mossiæ, the result being a large white flower, except for a small streak of

ODONTOGLOSSUM ST. GEORGE, RALLI'S VAR, F.C.C., R.H.S., NOV. 16TH, 1922.

purple colour on the centre of the labellum. It produced similar flowers during several seasons, but on the last occasion the flower, strange to relate, was blush tinted in all its segments. Hybrids of Sophronitis grandiflora have been raised, and include a charming variety of Slc. Renown, and Slc. His Majesty, the latter a home-raised result of Slc. Marathon crossed with C. Trianæ.

Leaving the Cattleyas, we pass on to a house of similar construction,

although not so long, that is almost filled with 250 plants of Vanda cœrulea. This species has always been a most difficult one to cultivate, no matter in what locality or collection. These plants have been here from eight to ten years, and although their condition might satisfy many cultivators, they are not entirely free from disfigurements of the leaves. Different methods have been tried, and at present a row of plants is being grown in various composts, but so far with no apparent difference in the results, there being a varying amount of spotting that occurs on the foliage through some unaccountable reason. A few plants have been grown for some time in the seed-raising house, where the temperature is high and there is a continuance of excessive moisture with little or no ventilation. Perhaps it is too early to speak of the final results of this method, but at present the plants appear to be appreciating the treatment. However, the Vanda house contains many plants that may be described as healthy specimens, and one has only to recall the brilliant group of these flowers intermixed with Cymbidium insigne Sanderi that was exhibited by Mr. Ralli at the Autumn Exhibition of Orchids last year to form a just opinion of their exquisite decorative nature. Vanda cœrulea King of the Blues, one of the richest forms yet seen, carried a spike of 11 flowers and 9 buds when it received a First-class Certificate on October 10th, 1920. Other Vandas include tall specimens of suavis and tricolor, and there are plants of Angræcum sesquipedale that have been in the collection upwards of 30 years. A plant of Zygopetalum maxillare Sanderianum growing on a piece of tree fern came from the collection of Sir Trevor Lawrence. Lælia Gouldiana and L. anceps in variety are showing their tall flower spikes, and on the central staging is a representative collection of Cymbidium species and hybrids.

Another house, of the span roof type, is filled with unflowered Cattleya seedlings. Many crosses have been made with the intention of producing yellow-flowering hybrids, and of these a promising batch exists with C. Iris and Lc. luminosa aurea as parents. Others have been raised from C. Venus and C. aurea. White-flowering hybrids are another speciality, and include promising seedlings from the albino variety of C. gigas known as Firmin Lambeau. A number of plants that will come in very handy for flowering at the time of the Chelsea Show result from C. Mossiæ crossed with Lc. Aphrodite. The second division of this house contains a number of unflowered seedlings, a fine strain of Lc. Honoria which bears flowers beautiful in shape as well as in colour, also plants of Sc. Doris, Dendrochilums, and the richly-coloured Miltonia spectablis Moreliana. Cattleya Gaskelliana, of robust habit, has been raised from seed, all the plants yielding pure white flowers. The third division is devoted to a selection of Cypripediums, such as Venus, Boltonii, and insigne Sanderæ, a robust lot of Miltonias of the vexillaria section, including Empress Augusta, and

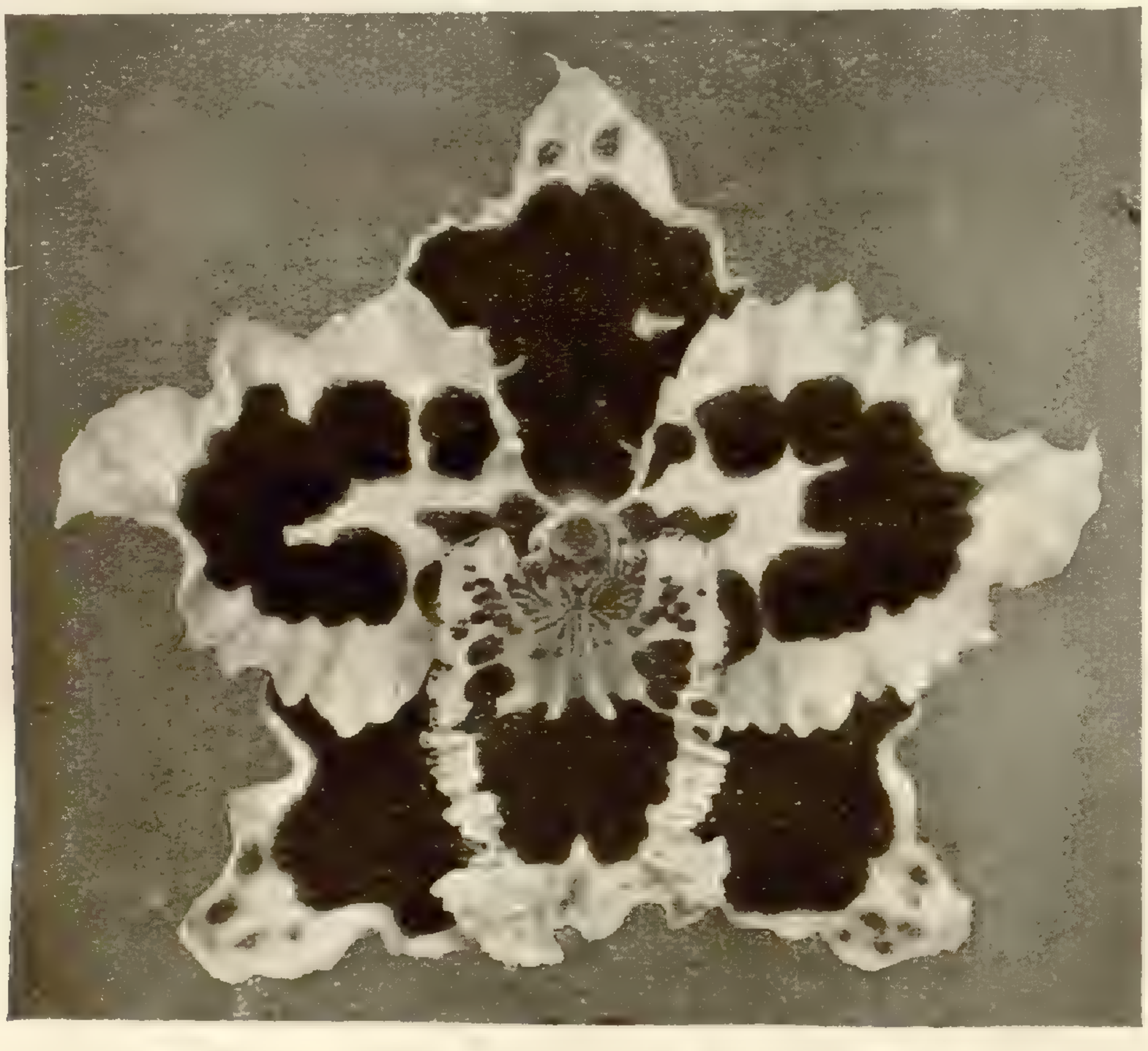
Odontonia brugensis, the result of crossing Od. Edwardii with the G. D. Owen variety of Miltonia vexillaria. In the fourth division of this long house there are over a thousand seedlings, including excellent crosses between Blc. Thyone and Blc. The Baroness, from which yellow-flowered results are expected, also various hybrids between albino Cattleyas and Brassocattleyas. Vanda Sanderiana is cultivated in a teak-wood cylinder, and several plants of Phalænopsis Rimestadiana in shallow pans suspended from the roof. Angræcum Leonis with its peculiar foliage succeeds admirably, as also does the very scarce but delightful Læliocattleya Illione with its spikes bearing upwards of twenty flowers,

ODONTOGLOSSUM APHRODITE VAR. MRS. T. ZARIFI OF BRIGHT LILAC ROSE-COLOUR.

The new Odontoglossum house is shaded by means of lath blinds placed directly on the sash bars, and with the laths parallel to them. During the brightest period of summer an additional blind of canvas material is used about a foot above the glass, so as to allow a current of air to circulate between the two blinds. There are some thousands of Odontoglossums, and all of them look uncommonly well, the foliage being fairly stiff and having just that nice touch of bronze tint that is the sure sign of good health. In a collection of this importance there are always many representatives to be found of the well-known species. In this house are numerous

varieties of O. crispum, including Magnum Bonum, a very round flower, but one that requires careful growing to get good results, also O. crispum solum, with its distinctive blotching, O. crispum Snowball, named in allusion to its round white flowers, and the variety Windsor, a beautiful form with much spotting on a white ground. An older variety, yet still one of the best, is Seraphim, and there are two peculiarly marked ones called Lady Jane and Oakfield Sunrise. Two fine yellow flowers are to be seen in O. crispum Laburnum, appropiately named, and O. crispum aureum. O. Pescatorei Virginia is a pleasing variety distinctly marked with purple spots.

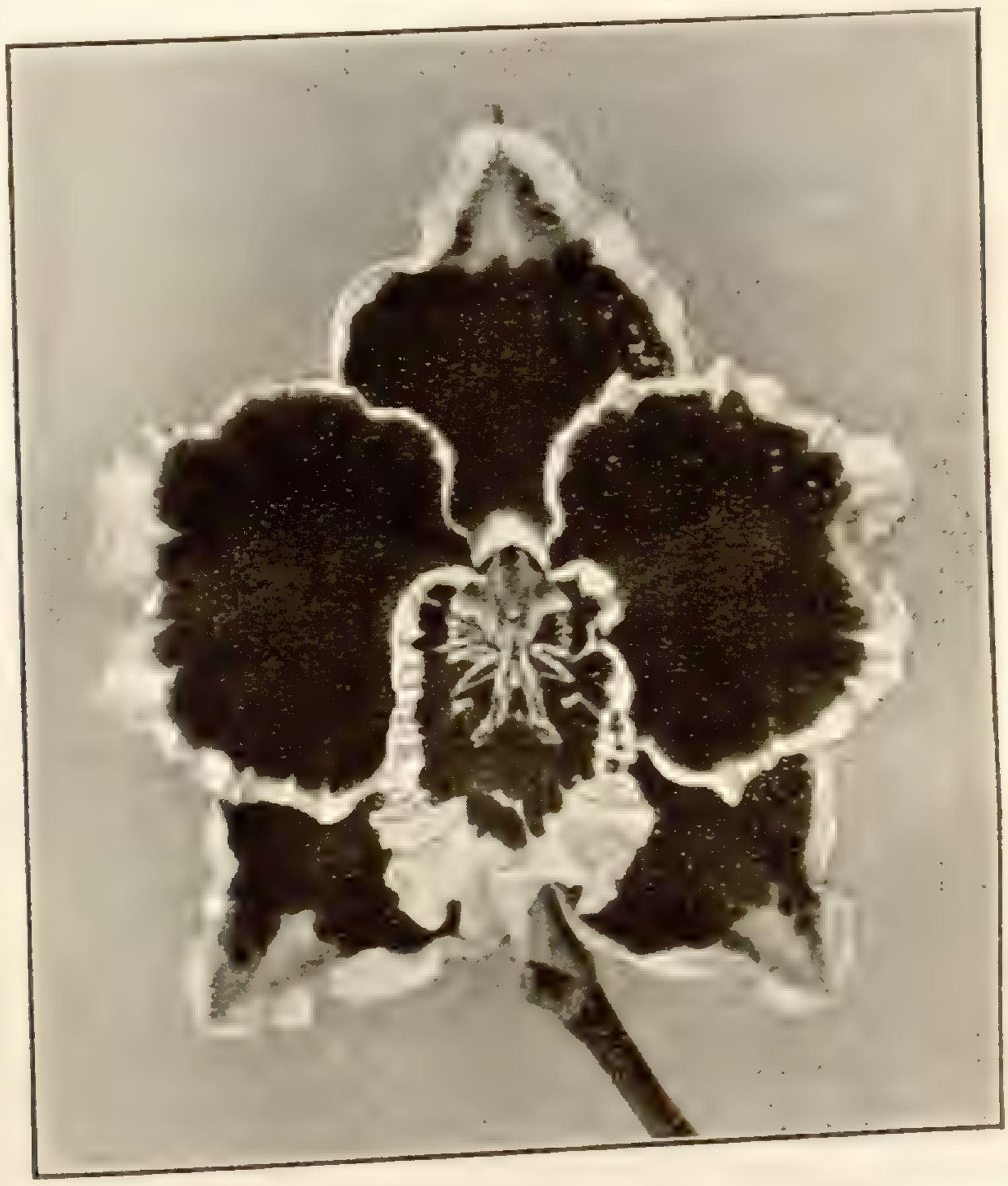
To be considered of out-standing merit to-day an Odontoglossum must be something more than a pretty flower with a few spots in irregular positions. A glance at the illustration of O. St. George, Ralli's variety,



ODONTOGLOSSUM CRISPUM BLACK KNIGHT.

will show that the Orchid Committee of the Royal Horticultural Society gave it a First-class Certificate on account of the excellent formation of the segments and the decisive blotches of rich crimson-purple colour. In O. Aphrodite var. Mrs. T. Zarifi, the segments are unusually round and almost covered with a bright lilac rose tint, the border line of the same colour greatly adding to the pleasing effect, while the yellow crest on the labellum is the finishing touch. A few Odontoglossums are noted for the blackness of their blotching, and quite a little colony of them has been formed. The distinguishing names are very suggestive, and include Black Knight, Sambo (eximium × Black Prince), Dinah and Negro, as well as Uncle Tom and Pierrot

As previously remarked, this collection is famous for its fine yellow varieties, and we notice O. Caroline aureum, obtained by combining the yellow triumphans with the white crispum and Pescatorei, also O. Canary, in which the yellow colour has been procured by using O. Wilckeanum, O. Saffron (Adrianæ × Fascinator), and O. ardentissimum sulphurianum, which is an immense plant yielding branching spikes of sulphur-coloured flowers. Space will not permit of describing the host of other hybrids obtained by crossings of the best-known species, an entire article could be written on them. It is sufficient to mention O. Crawshayanum superbum, and a hybrid between it and O. Rolfeæ that has been



ODONTIODA NADA, RALLI'S VAR., F.C.C., R.H.S., JAN. 13TH, 1920.

named O. Farnesii, after Mr. S. Farnes, who has been in charge of this fine collection since September, 1909, and has obtained much success in all its sections.

In Odontoglossum eximium Arghiro there is to be seen a wonderful variety that is considered one of the gems of this immense collection. A somewhat unusual experiment was made in crossing two very fine varieties of Od. eximium, and in the offspring have appeared some very handsome flowers, the best of which has been named O. eximium Alexandra. Another fine eximium known as Mabel received an R.H.S. Award of Merit in 1921.

The elegant O. Ossulstoni is represented by The Shrubbery variety, A.M., R.H.S., it is still the best of its kind. A couple of remarkably fine crispums are distinguished by the varietal names, Ronald and Zenith.

Odontiodas may next claim our attention, for they are of high merit and well cultivated. Our illustration is of Oda. Nada, Ralli's variety, F.C.C., R.H.S., January 1st, 1920. It is a remarkably fine hybrid, in which the comparatively large flower is blotched with blood-red colour, and the tips of the segments stained with rose.

In Fowler's variety of Oda. Cooksoniæ, the segments are almost covered with a solid blotch of reddish scarlet, and in Oda. Lambeauiana var. Nellie there exists one of the best of these brightly coloured hybrids. It received an Award of Merit in 1915. Oda. Major Ralli and Oda. Rubicon are others worthy of special mention. But scarlet and red are not the only colours now seen in Odontiodas, for in a variety of Oda. Norma (Oda. Lutetia × O. crispum) the flowers are yellowish brown. This particular plant is one of Mr. Ralli's favourites. Oda. Lutetia is a hybrid of O. luteopurpureum, and it is from this latter species that the yellow colour has probably been derived.

Fine Oncidiodas are still comparatively few in number, but this collection contains two excellent varieties of Onda. Cooksoniæ, known respectively as Grenadier and Ralli's variety, both of which have received R.H.S. Awards of Merit. A large number of unflowered hybrids are mostly big enough to flower, and a few early spikes are noticeable. A rather unexpected result occurred with some Orchid seed received from another collection, for when it had been germinated and the plants grown on to flowering size, it was discovered that each one was a true example of Trichopilia fragrans. A little batch of Odontoglossums is also of interest, for they came from a collection in Lille, France, after spending some years of the war period hidden away beneath the staging.

The last house to be described is of the three-quarter span type. It is of considerable length, and divided into three sections. Formerly it was the principal Odontoglossum house, but now contains duplicates of many of the best varieties. If the old back bulbs do not break forth readily into growth, they are suspended from the roof until they show life, when they are taken down and placed in small pots. Maxillaria tenuifolia had been in flower three months when these notes were taken. There are also good plants of M. venusta, the scarce Odontoglossum Oerstedii, O. Humeanum, a large specimen of Trichosma suavis with upwards of fifty stems, various Oncidiums, including macranthum hastiferum, and Odontocidium Edwardatum (O. Edwardii × On. macranthum). Cœlogyne barbata has made unusually large bulbs during the past season, and the flower spikes are equally good. One cannot help noticing a row of healthy plants of S.

grandiflora, each with many leads, among them being S. Lowii with its pretty yellow flowers.

In referring to a batch of Calanthes growing in a Melon pit, this account of one of the finest collections must be brought to a close, for space does not permit of describing the large number of other Orchids whose names have not even here been mentioned. The recent extensive additions to the range of glasshouses, as well as the re-modelling of the older ones, have been carried out under the direct supervision of Messrs. Armstrong & Brown, of Tunbridge Wells.

THE BAPTIST MEDAL.—R. G. Fitzgerald, in the first part, dated 1875, of his monumental work on Australian Orchids, states that "the late Mr. John Baptist" was probably the first to bestow any practical attention on the fine and remarkable Orchid known as Pterostylis Baptistii, which was found by him growing in a "tea-tree" swamp, and removed to his nursery gardens, where it was cultivated. Specimens were sent from "Baptist Gardens" to Fitzgerald, whose attention was thereby directed to the locality, Hen and Chickens Bay, where it was first obtained, and close to which he subsequently had the satisfaction of observing it. It was for the above reason, and also in consideration of the assistance rendered by Baptist to horticulture when in its infancy in New South Wales, that Fitzgerald named this species Pterostylis Baptistii, considering it the most likely to attract the attention of florists. Under a trust fund endowed recently by the late Mr. J. T. Baptist, an old Sydney nurseryman, for the encouragement of horticulture in Australia, the Baptist Medal has been instituted, and we are gratified to learn that the first one has been awarded to Mr. Arthur Yates, of Sydney, Australia, for a group of 24 Cypripedium hybrids raised by him and exhibited at the meeting of the Horticultural Society of New South Wales held in July last. Mr. Yates gives his experiences in the following pages.

EPIDENDRUM BOOTHIANUM.—A coloured drawing of a flowering plant of this species has been received from R. Nelson Musgrove, Esq., Nassau, Bahamas, who procured his plant from the Island of New Providence, and now cultivates it on a block with some moss. E. Boothianum was originally described by Lindley, in 1838, and placed in the Epicladium section of the genus in which "the flowers grow out of a great spathe, and the pseudobulbs are evidently assuming the condition of an ordinary stem." The pseudobulbs are like those of Broughtonia, clustered, and the flowers are nodding, sweet-scented, yellowish-orange, spotted with purple. Lip white, spathe green, compressed, about two inches long, rising nearly as high as the lowest flowers.

RAISING CYPRIPEDIUM SEEDLINGS IN AUSTRALIA.

By ARTHUR YATES, Sydney, Australia.

THE following account of my experiences in raising Cypripediums from seed may be of interest to other amateurs situated, like myself, far from the main centres of Orchid culture, and who have to depend on the information gained from the *Orchid Review* and other English publications, as well as on the lessons learned from actually tending their own plants. In Australia there are only a few professional gardeners skilled in the growing of Orchids, but I have been fortunate in always having one good practical gardener who, besides attending to the outside garden, could be depended upon to see to the watering, ventilating and shading of the Orchid houses, and also to keep the fires going during the winter season. Although our climate in Sydney is a warm one, we get sharp frosts frequently during the three winter months, but the days are usually sunny and the air very dry.

My first experience in raising Orchid seedlings was through the gift to me of some seed of Cyp. insigne × C. Spicerianum by a professional gardener who had been trying his hand at cross fertilising. I had not much hope of being successful in raising any plants, as I had heard of the difficulties, and was without experience, and with few conveniences for seed-raising. However, the seed was sown round a healthy plant of Cyp. insigne, and for several months this was sprayed once or twice daily, but with no apparent results. Eventually it was decided that the experiment had failed, and no more special attention was given to it. Several months later my gardener noticed some microscopic seedlings growing around the surface roots of the mother plant, and we then did everything possible to bring them on. As soon as the plants were large enough to handle, they were pricked off into the smallest pots I could procure, two or three in each pot, which were all well drained and firmly packed with a compost of chopped green sphagnum and fern fibre. These pots were suspended in a shallow tray near the glass and surrounded with sphagnum to keep them uniformly moist. They were sprayed once or twice daily according to the weather, and within a couple of years or so they had developed into healthy plants large enough to be potted singly. My success in raising these seedlings, six or eight in all, encouraged me to go further into the fascinating hobby of raising new seedlings. I had a small collection of fairly good Cypripediums, and in 1911 I cross-fertilised ten of them. Within four years I made fifty distinct crosses. Many of the latter failed to mature any seed. I was not aware at the time of the exhaustive effect of seeding these plants, and mine were so weakened that most of them ceased to flower, and some of them have not recovered. Each flower after being fertilised took a year to ripen its seed, and this was sown in the manner described

above. It was about this time that war was declared, and for the next four or five years the Orchids, although not altogether neglected, did not receive the same constant personal attention, and I attribute to this the long time occupied by the seedlings in reaching the flowering stage. However, during the past couple of years the plants have received better care, and responded wonderfully. I repotted most of them into the smallest pots possible, and now they are nearly all in vigorous growth.

I found great difficulty in this dry climate in keeping the smaller pots of seedlings uniformally moist, but eventually adopted the plan of placing each small pot in a larger one with ample drainage of broken crocks and packing round the surface a layer of sphagnum. Since adopting this plan a year or so ago most of these small, backward plants have doubled in size. My experience shows that in each batch of seedlings there are a number of plants that are slow to germinate and afterwards appear to have no vigour. I am carefully nursing these weak plants, hoping to get something extra choice from them. As an instance of the slow germination and growth of Cypripediums, I have just been top-dressing a plant which was used as a mother plant to sow seed on six years ago, and was surprised to find half-a-dozen seedlings growing in the surface moss. These plants have two or three leaves and are up to two inches across; when the seed germinated I cannot say, but it must have remained dormant for at least three years after sowing.

Eight years after I sowed the first of my crosses I flowered a few plants, this year over thirty have bloomed, most of them for the first time eight to ten years after the seed was sown. I have still 200 unflowered seedlings, so I shall be kept busy classifying and recording them for the next two or three years. It will be readily understood that I am having a very interesting time with my plants. I know of no more delightful experience for the amateur gardener than to watch the gradual unfolding of the first flowers on seedlings he has himself raised from seed of his own crossing, thus seeing the results of years of labour.

It may fairly be asked what have been the results of this long waiting? With me on the whole they have been distinctly good. While some of the crosses have only reproduced ordinary types, others are much above the average, and are either distinct improvements on the parent plants, or else are so distinct as to be practically new varieties. All my crosses were carefully labelled and recorded when the flowers were worked, and also when the seed was sown and the resulting seedlings transplanted. But the diversity of the varieties apparently from the one batch of seedlings makes one wonder if a mistake has been made, or whether there is always great variation with certain crosses when hybrids are used as parents. One of my most successful and variable crosses was, according to my records,

raised from C. nitens var. Almos × C. villosum. This C. Almos is itself a cross between C. insigne and C. villosum aureum, and is a fairly large yellow flower with moderate-sized spots on the dorsal sepal. I have flowered about twenty plants, all labelled as from this cross, and all more or less distinct; some have the villosum colouring with no spots, others are similar to Almos, but the great majority are heavily spotted, and some even blotched where the spots run into one another. The colour of the dorsal sepals varies from yellow and cream to white with green base, and the spots vary from reddish-brown to almost black, the size and number of the spots also differs with each flower. All have great substance and a very glossy surface. With me the flowers have lasted two to three months in good condition. I have chosen four distinct types from this cross as worthy of varietal names. The flowers are carried on long stout stems and the plants are very vigorous. One would think by their appearance that the richly spotted forms were hybrids of C. Boxalli, and it would be interesting to know if other raisers have got heavily spotted varieties from hybrids of insigne crossed with villosum. Another cross, C. Simoni punctatum × insigne Harefield Hall, has given me an extremely large and beautiful flower of the large spotted insigne type, but with a broader margin of white than I have seen before. I see no sign of any influence of the Spicerianum ancestor, except it is in the widening of this white border.

A very attractive hybrid of which the parentage is doubtful has a bright apple-green dorsal sepal with a broad white edging; there are a few small dark spots towards the base, the wings and pouch are light brownish-yellow with glossy surface, and four inches across. It is a very attractive flower. Another distinct hybrid has a dorsal sepal of nut-brown colour on the lower half, changing to rich green with a white edging. A variety of Troilus (nitens × insigne Harefield Hall) has a very large flower in which the dorsal sepal is of old gold colour, and with a white edge and large spots. Other hybrids have the dorsal sepal of wine-purple splashed with green and edged with white. The flowers vary from three to four inches across and are all of the winter-flowering class.

I showed twenty-four of these seedlings at the monthly meeting of the Horticultural Society of New South Wales in July last, and was awarded a Baptist Medal for the best Australian-raised varieties of flowers other than Daffodils, Dahlias, Sweet Peas, Carnations and Chrysanthemums, for which special medals were offered. This being the first medal to be awarded under a trust fund endowed by the late Mr. J. T. Baptist, an old Sydney nurseryman, for the encouragement of horticulture in Australia. These notes will show that while the fascinating occupation of raising seedling Orchids is not altogether neglected in Australia, the quick results recorded by raisers in Europe and America have not been attained by me.

NEW HYBRIDS.

NAME.	PARENTAGE.	EXHIBITOR.
Brassocattlælia Vashti	Lc, Beatrice × Bc. Bianca	McBean
Cattleya Bardic	C. Carmen × C. labiata	Stuart Low
Cattleya Don	C. Remula × C. Armstrongiæ	Stuart Low
Cattleya Donald McKenzie	C. Miss Williams × C. Hardyana... ...	Julius Roehrs Co.
Cattleya Janet P. Crawfurd	C. Mantinii × C. Dorothy Bushell ...	F. J. Hanbury, Esq.
Cattleya Jessie C. Murray	C. Chamberlainiana × C. Octave Doin ...	F. J. Hanbury, Esq.
Cattleya Magdelena Lowe	C. Prince Edward × C. aurea	Julius Roehrs Co.
Cattleya Marie McLeod	C. illustris × C. aurea	F. J. Hanbury, Esq.
Cattleya Mrs. Edward Roehrs ...	C. Prince John × C. aurea	Julius Roehrs Co.
Cattleya Muriel Henderson	C. Thomasii × C. Fabia	F. J. Hanbury, Esq.
Cattleya Oliver Lines	C. armainvillierensis × C. aurea	Julius Roehrs Co.
Cattleya Orita	C. Vestris × C. aurea	Stuart Low
Cattleya Salara	C. labiata × C. Astron	Cowan
Cattleya Vuldow	C. Vulcan × C. aurea	Stuart Low
Cypripedium Ada	Hitchinsiæ × Lord Wolmer	Cowan
Cypripedium Aquila	Alcibiades × Germaine Opoix	Cowan
Cypripedium Fusilier	Selene × Gurka	Cowan
Cypripedium Henry Elwes	C. Germaine Opoix × C. Goliath ...	Dr. Craven Moore
Læliocattleya Albert C. Burrage ...	Lc. Herscentiæ × C. aurea.	Julius Roehrs Co.
Læliocattleya Dodona	Lc, Haroldiana × Lc. N. Beauclerk ...	Cowan
Læliocattleya Ernest B. Dane ...	C. labiata × Lc. Martinettii	Julius Roehrs Co.
Læliocattleya Litana	C. Sybil × Lc. Thyone	Cowan
Læliocattleya Monarch	Lc. Serbia × C. aurea	McBean
Læliocattleya Mrs. Medo	C. Venus × Lc. luminosa	Stuart Low
Læliocattleya Ortega	Lc. Labiosa × C. Dowiana	Stuart Low
Læliocattleya Profusion	C. Hardyana × Lc. Serbia	McBean
Læliocattleya Rothwellii	Lc. Geo. Woodhams × Lc. Rubens ...	McBean
Læliocattleya Warrior	C. Fabia × Lc. Serbia	McBean
Odontioda James O'Brien	Oda. Oakwoodiensis × Oda. Chanticler ...	Sir J. Colman
Odontoglossum Beulah	O. crispum × C. Midnight	McBean
Odontoglossum Moreno	President Poincaré × O. Harryanum ...	Charlesworth
Odontoglossum Nereus	O. The Czar × O. Prince Albert	Charlesworth
Odontoglossum Orthus	O. Lambeauianum × O. Olympia ...	Charlesworth
Odontoglossum Pegasus	O. Lambeauianum × O. President Poincaré	Charlesworth
Odontoglossum Priapus	O. Maillardianum × O. Alexandrina ...	Charlesworth
Odontoglossum Sylvanus	O. eximum × O. Aquitania	Charlesworth
Odontoglossum Theseus	O. l'Aiglon × O. The Czar	Charlesworth
Odontoglossum Ursus	O. amabile × O. Georgius Rex	McBean
Odontoglossum Vedas	O. Rolfeæ × O. Leviathan	Charlesworth
Potinara Royal Purple	Blc. Gerald × Sc. westfieldiensis	Flory & Black
Sophrocattleya Boltonii	S. grandiflora × C. Percivaliana	P. Smith, Esq.

BRASSOCATTLEYA VISCOUNTESS TODA.—This beautiful novelty, the result of crossing C. Empress Frederick with Bc. Digbyano-Mendelii, was included in the Gold Medal group exhibited by Messrs. Mansell & Hatcher, at Nottingham, on November 9th, and two following days. The large flower has all the segments very pleasingly set, the petals being considerably wider than those usually seen in Brassavola hybrids, while the margin of the expansive labellum is crisped and delicately fringed. In colour it is uniformly of bright rose-pink, except for the disc of the labellum, which is yellowish.

AN AMATEUR'S EXPERIENCE.

BY JOSEPHINE R. WALKER.

WHEN we got our seedling Cattleyas and Læliocattleyas in the spring they were repotted, and many of them have since been shifted into larger pots. They are very interesting to us, and I try to follow the crosses, similar ones of which have appeared in the "Orchid Review," though I expect the same varieties crossed by different growers will not give identical results. In fact, I expect there is a great difference in seedlings from the same pod.

We find that the new leaves, and in many cases the new bulbs, are of a much deeper colour than those made during the season before we obtained them. Nearly all the bulbs are a great improvement on the previous ones, and many have produced sheaths, and though one is sorely tempted to let them flower and see what they really are, I think it will pay to take them out, and thereby give the plants a greater chance to get very strong. We had them on the centre section, where they have had the full benefit of whatever sun there has been during the past year. They have been without shade of any kind and have rooted splendidly. We had some sixteen Sophrocattleyas among them, and my husband was reading in an old Orchid book that these were better suited in a light, cool and airy position for the winter, and at no time did they stand syringing overhead, so we have evidently not been giving them the best of treatment. However, they look alright, and are now on top of the "Monkey House" on a ledge, where they will get all the light and air they require We will keep them on the dry side for the winter. They vary very much in appearance, one little fellow, which has very much the habit of a Sophronitis parent, is producing two flower-sheaths, another has light green leaves, and others have reddish leaves with deep-red lines. I am looking forward to seeing them in flower, for I am charmed with all I have seen.

Our plants of Cattleya Fabia are moving along splendidly; some are now filling their sheaths. They have all been grown on from back bulbs of fine varieties. We also have a batch of twenty Cattleya Florina (Mastersoniæ × aurea), a very pretty and free-flowering hybrid, and which are also from back bulbs. When we get these two lots to the flowering stage there should be something really worth looking at, and they will be most useful for cut flowers in the autumn and winter months. But I question whether they will excel the Cymbidium genus with us. Even the big specimens of C. Tracyanum that we shifted last spring into port-wine casks, their future home for many years, are showing strong flower spikes. Certainly we did not do much in the way of root disturbance, but we put a quantity of loam fibre around them that will serve for years to come. This may perhaps be wrong in theory, but so far it seems to have answered.

Our four big C. Lowianums are each throwing two strong spikes, and five of the C. Sanderi are also showing for flower, but these are usually later with us than the other varieties. We have a fine distinct clump that a friend got from India, and as he does not manage Cymbidiums it was kindly passed on to us. It is now showing two spikes. We have twenty-eight plants of the beautiful C. Sanderi, young and old, and we separate the back bulbs with impunity, placing them in moss, when they soon commence to grow. We keep them at the coolest and shady end, where the sun cannot get to them, standing on a bed of cool ashes. In the morning and last thing at night we damp down thoroughly between them, and overhead in the day-time if the temperature is right. One point which leads us to think that this treatment is correct, is that one of the biggest plants of C. Sanderi was potted with a Lælia, in a pot that had openings down the side, and which has stood on a large upturned pot all the season amongst the others, but has not enjoyed the cool bed of ashes as they have, and probably not been kept so moist; anyhow the fact remains that it is the only one of the larger plants that has not made up its bulbs properly and, though there are five growths, there is no sign of a spike in any one, so back to the ashes he goes with his brethren.

ODONTOGLOSSUM AMABELICITY.—From the collection of P. Smith, Esq., Haddon House, Ashton-on-Mersey, Mr. E. W. Thompson sends a flower of O. Amabelicity (amabile × Felicity), a very pleasing novelty. The sepals and broadly-developed petals are clear white, and with a glistening appearance, all being crisped at the margin and prettily spotted with rose-violet. The lip, however, is yellowish, the central area carrying a large bold blotch of crimson, making a very effective combination of various colours.

CATTLEYA DOWIANA AND C. AUREA.—Although C. Dowiana is a native of Costa Rica and C. aurea of Colombia, the latter is by some authorities considered a geographical variety of the former. Both have been very much used in the production of hybrids, and are now hopelessly confused in the records. With the intention of increasing the stock of yellow Cattleyas, C. Dowiana has been fertilised with C. aurea, and about eighteen of the resulting seedlings flowered during the past season with the Julius Roehrs Co., Rutherford, N.J., U.S.A. We are informed that in some cases the sepals and petals were more yellow than in either parent, while in others they were darker than in Dowiana. According to Ridgeway's Colour Standards the sepals and petals were Empire-yellow to Mustard-yellow. It is an interesting hybrid—if one can call it a hybrid—and when made further use of as a parent will no doubt produce better yellow results than those obtained by either Dowiana or aurea.

R.H.S. AUTUMN ORCHID SHOW.

THE Annual Autumn Orchid Exhibition arranged by the Royal Horticultural Society and held at Vincent Square, Westminster, on October 31st, was visited by a large number of Fellows and their friends. The event was in every way a success, and it is expected that next year it will be extended to two days.

Members of the Orchid Committee present : Sir Jeremiah Colman, Bart. (in the chair), Messrs. Jas. O'Brien (hon. sec.), Gurney Wilson, T. Armstrong, J. E. Shill, Stuart H. Low, F. J. Hanbury, E. R. Ashton, Pantia Ralli, A. McBean, W. H. White, C. J. Lucas, F. K. Sander, H. G. Alexander, C. H. Curtis, S. W. Flory, A. Dye, J. Cypher, W. H. Hatcher, H. T. Pitt, and R. G. Thwaites.

FIRST-CLASS CERTIFICATES.

Odontoglossum crispum Beauty Spot, from Pantia Ralli. Esq., Ashstead Park, Surrey (gr. Mr. S. Farnes). A home-raised variety of massive build, the segments being pure white, the sepals and lip each having a large bold spot of reddish-purple colour. The spike carried six flowers.

Vanda luzonica dulcis, from Messrs. Sanders, St. Albans. A beautiful variety of this rare species imported from the island of Luzon. The arching spike carried several large white flowers, with marginal bands of rose-violet colour on all the segments.

Læliocattleya Dodona (Lc. Haroldiana × Lc. Nelthorpe Beauclerk), from Messrs. Cowan, Southgate. This plant carried two large flowers of orange-yellow ground colour, and having a brilliant over-tint of blood-red colour; the broad labellum rich crimson-purple.

AWARDS OF MERIT.

Odontoglossum Princess Yolande (eximium × l'Empereur), from R. Gerrish, Esq., Milford Manor, Salisbury (gr. Mr. W. Sorrell). An elegant result in which the spike carried six flowers handsomely blotched with reddish-claret colour.

Læliocattleya Venada, Rosslyn var. (Lc. Baron Schröder × C. Aurea), from H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood). A very pleasing result, the flower being well-formed, the segments of delicate rose and reddish tints, the lip orange-yellow.

Odontoglossum crispum Silver Moon, from Pantia Ralli, Esq. The spike carried five flowers of excellent formation, silvery-white, the lip having a few small spots.

PRELIMINARY COMMENDATIONS.

Odontoglossum Re-echo, from Pantia Ralli, Esq. A young seedling with a single flower in which all the segments are effectively marked with brownish-red.

Odontoglossum Bonar Law (nitidum × amabile), from Messsrs. Charlesworth & Co. The best of three varieties of this hybrid, the larger flower having the expansive segments prettily marked with rose-violet colour.

CULTURAL COMMENDATIONS.

Mr. Farnes, orchid grower to Pantia Ralli, Esq., for a fine specimen of Trichosma suavis carrying upwards of 15 many-flowered spikes.

Mr. Thurgood, orchid grower to H. T. Pitt, Esq., for a handsome plant of Nanodes Medusæ, with several well developed flowers.

GROUPS.

The 30-guinea Challenge Cup offered by members of the Orchid trade for the best collection shown by an amateur, and a silver-gilt Lindley Medal were awarded to Baron Bruno Schröder, Englefield Green (gr. Mr. J. E. Shill). In the centre of the back row were immense specimens of Læliocattleya Tiresias (C. Bowringiana × Lc. elegans), each having several many-flowered spikes and proving that even a comparatively poor hybrid becomes extremely ornamental when well cultivated. There were upwards of a dozen fine specimens of Cypripedium Maudiæ, each with 20-25 flowers, also several equally well cultivated plants of Cyp. insigne Sanderæ. The Dell variety of Læliocattleya Ivanhoe, as well as many other forms of this handsome hybrid carried from six-eight flowers each, and were objects of considerable attraction. Intermixed were numerous xanthotic Odontoglossums, and in the front a selection of Calanthe Harrisii, all grand specimens and with many white flowers. Cattleya Astron, with pure white flowers, looked well along with the rose-tinted varieties of Dendrobium Phalænopsis, and mention may also be made of finely-developed Brassocattleyas, of which Rutherfordii was in a prominent position. These plants in this group were all magnificent examples of cultivation, and the group well deserved the high awards bestowed upon it.

H. T. Pitt, Esq. (gr. Mr. Thurgood), was awarded the 20-guinea Challenge Cup offered by members of the Orchid trade, and a Silver-gilt Flora Medal. In the centre was a fine specimen of Aërides Lawrenceæ, with two pendulous spikes of 30 flowers each, and on either side were several grand Odontoglossums, including Bullecourt with a spike of eight reddish blotched flowers. Cattleya Enid alba carried three large flowers, and Læliocattleya Venada had a single flower of a pleasing soft rose tint, covered with delicate venation, and the expansive labellum orange-yellow. Brassocattleyas were represented by Sofrano var. Princess Mary, a fine flower of yellow tints. In the front row were numerous Masdevallias, the quaint Nanodes Medusæ, Miltonia spectabilis extraria, Maxillaria venusta, and Pitt's variety of Od. grande. Many excellent Cypripediums and botanical species were also included. Odontoglossum crispum The Marquis was in fine form, and received an Award of Merit, but it was

subsequently discovered that a similar recognition had been granted to this plant on a previous occasion.

Sir Jeremiah Colman, Bart., Gatton Park, Surrey (gr. Mr. Collier) was awarded a Silver-gilt Flora Medal for a most interesting group containing, in the centre, a grand plant of Blc. Antoinette, with six flowers of model formation and of an intense rose-mauve colour. Cattleya Princess Royal (Fabia × Hardyana) was very pleasing, and Lc. Countess Torby carried flowers resembling those of Hardyana. In the back row were many specimens, such as Cattleya Bowringiana lilacina with three many-flowered spikes, and C. Chloringiana obtained by crossing the former with C. Chloris. White varieties of Cattleya labiata were represented by Mrs. E. Ashworth and The Empress, and yellow Odontoglossums by O. Wilckeanum Colmanii. Near the front were many interesting species, including Cirrhopetalum miniatum with reddish flowers, the pretty Bulbophyllum guttulatum, Trias densiflorum and Brassocattleya Mary. Among the choice Cypripediums were Dreadnought and Ellis Markendale. A very pretty Odontoglossum hybrid was seen in Pink Pearl, and a good blotched one in Lily Neuman.

Mrs. Mary Joicey, The Hill, Witley, was awarded a Silver-gilt Flora Medal for a very attractive group containing, at the back, several finely grown plants of Vanda cœrulea, and the rare Vanda luzonica. In the centre was the superb Cattleya Adula, Glebe variety, surrounded by Lc. luminosa aurea, Lc. Salonika, with white sepals and petals, Cattleya Hardyana alba and the handsome C. Bellona. Another grand hybrid was seen in Cattleya amabilis alba. There were also several well-flowered plants of Dendrobium formosum and Od. grande, while Phalænopsis amabilis and some good Odontiodas were well staged. Among the Cypripediums were Maudiæ coloratum, as well as the albino variety, and the pretty Frau Ida Brandt. The best Brassavola hybrids were Blc. Risdene, richly coloured, and Bc. Ilene, with a large fringed labellum.

Messrs. Charlesworth & Co. were awarded a Gold Medal for a grand group containing a remarkable selection of xanthotic and pure-white Odontoglossums, the graceful many-flowered spikes giving a beautiful effect, especially welcome in the dull autumn months. The principal novelties embraced Potinara Juliettæ, of rose-crimson colour, Vuylstekeara Fascination (Oda. Feronia × M. Bleuana), Odontonia Thisbe, white, with an orange coloured crest on the lip, and a very fine variety of Blc. Golden Crown. Among the white hybrids were Lc. Schroederæ alba and Cattleya Eva, while yellow ones were seen in Lc. luminosa aurea, Lc. Golden Wren and Bc. Sofrano. Lc. Britannia Melanie carried three superb flowers, and Lc. Don. Juan was represented by an unusually good variety. Odontonia Latona had three rich purple flowers, and Odontioda Adela carried a spike

of reddish flowers, the segments tipped with rose. Along the front row were well-flowered examples of Dendrobium Cœlogyne, the pretty Phalænopsis Esmeralda, and Cypripedium Harrisianum albens. A distinct hybrid was staged in Blc. Truffautiana var. Distinction (Lc luminosa × Bc. Mrs. J. Leeman) the greenish-yellow sepals and petals showing up the large mauve lip.

Messrs. J. & A. McBean received a Gold Medal for an extensive and beautifully-arranged group, every plant being staged to perfection. The centre piece was composed of Oncidioda Cora and Oncidium incurvum, the tall many-flowered spikes rising to a height of several feet. The finely flowered Cattleyas included Lord Rothschild alba, O'Brieniana alba, the A.M. variety of Dinah, Aenæs of apricot-yellow colour, and Clotho, the latter of splendid formation. Læliocattleyas were represented by Linda, of rich reddish-apricot colour, Persis, with a spike of three reddish flowers, the lip golden in the throat and side lobes, and Nelius, with yellow sepals and petals, and a bluish-purple lip. The Odontoglossums were excellent and included Jasper, with 17 flowers, eximium xanthotes, well spotted with yellow, the handsome St. George, and Uro-Skinneri var. Black Prince, with a tall spike of over 20 flowers. Odontioda Madeline, with copper coloured flowers, and Oda. Euterpe of reddish-scarlet, were finely shown. The elegant Cymbidium erythrostylum and numerous Cypripediums of excellent quality were effectively staged.

Messrs. Sanders received a Silver-gilt Flora Medal for a very attractive group containing, in the centre a robust plant of Renanthera Lowii bearing a single spike with 24 flowers, two of which were basilar. On elevated stands were specimens of Odontonia brugensis, the variety magnifica being well above the average form. Cattleyas included the white Puritan, Enid, and Dupreana, as well as Peerless (Lady Veitch × Gaskelliana alba), a pure-white result. Near the centre was a fine specimen of Vanda cœrulea splendida with two spikes carrying 12 and 20 flowers respectively. A very pleasing Læliocattleya was seen in Carmencita var. The Witch. and Brassocattleyas were represented by a handsome variety of Crofutiana. In the front were several well-flowered plants of the charming Cpyripedium Fairrieanum, various Masdevallias, Trias grandiflora, and a fine form of Maxillaria venusta.

Messrs. J. Cypher & Sons were awarded a Silver Flora Medal for an interesting group containing a remarkable specimen of Brassia maculata, carrying a total of twenty large flowers. In the centre was Cattleya Portia, Appleton's variety, with a fine truss of flowers, and in prominent positions were many of the best-known Cypripediums, of which Shogun, Watsonianum and beechense were especially good. The pretty Oncidium cucullatum, Dendrochilum Cobbianum with many pendulous spikes, and the curious

Bulbophyllum barbigerum were much appreciated. Cattleya Peetersii was staged in both coloured and white varieties, all well flowered, and there was a fine example of the pure-white C. Astron. Various Oncidiums of bright yellow colour made a pleasing effect.

Messrs. Cowan, Southgate, were awarded a Silver Flora Medal for a well-arranged exhibit of choice Cattleyas and Cypripediums, the former including Salara (labiata alba × Astron), with three white flowers, Thebes (Adula × aurea), brightly coloured, and Bertii alba. Among the Læliocattleyas were Latana with two flowers of reddish copper colour, several plants of luminosa aurea, and Hassalii alba, with three large white flowers, the labellum bright purple. Cypripediums embraced Troilus var. Sir William Holdsworth, King George V., Dreadnought, the handsome Shogun, the F.C.C. variety of Boltonii, good forms of Rosettii and the well-known Christopher.

Messrs. Flory & Black were awarded a Silver Flora Medal for an attractive group in which were several superb Cattleya hybrids, of which Princess Ileana was well staged, and King Victor carried a handsome flower of rose tint on yellow ground, the lip much like that seen in a fine Hardyana. There were several excellent Brassocattleyas, including that known as Dr. G. G. Macdonald, Viscount Toda, of rich rose colour, and Lotus var. Grimaldi, an unusual combination of tints, the large lip of tenebrosa style. Cattleya Fabia alba was excellent, and among the many Sophronitis hybrids were Sc. Dorea, of terra-cotta tint, a fine variety of Sl. Gratrixiæ, the pretty Slc. Phryne and Blc. Alcides.

Mr. Harry Dixon, Wandsworth Common, was awarded a Silver Flora Medal for a group of various species and hybrids, the centre being occupied with a fine example of Cattleya The Bride, with well-developed white flowers. Cattleya Fabia and C. Hardyana were in excellent form, as also were many Cypripediums, including insigne Sanderæ, Maudiæ and Leeanum giganteum. A few choice Odontoglossums added brightness to this exhibit, and along the front portion were several richly-coloured Odontiodas, scarce Masdevallias and Oncidium species.

COWAN & Co.—The premises, stock, and goodwill of the well-known firm of Hassall & Co., Southgate, London, which, owing to the death of Mr. A. Hassall, had to be disposed of, have been purchased by Mr. D. A. Cowan and Mr. J. C. Cowan, who will trade under the name of Cowan & Co. Messrs. D. A. and J. C. Cowan have also purchased the business of John Cowan & Co., Orchid Growers, Gateacre, Liverpool. Owing to advanced years, Mr. John Cowan, Senr., is retiring, and the Gateacre premises have been closed down. The best of the stock has been removed to Southgate, London, where, in future, the business will be entirely conducted.

ROYAL HORTICULTURAL SOCIETY.

November 14th, 1922.

MEMBERS of the Orchid Committee present: Sir Jeremiah Colman, Bart. (in the chair), Messrs. Jas. O'Brien (hon. sec.), Rev. J. Crombleholme, H. T. Pitt, Fred. K. Sander, Fred. J. Hanbury, Pantia Ralli, E. R. Ashton, T. Armstrong, S. Flory, J. E. Shill, J. Wilson Potter, C. H. Curtis, and Gurney Wilson.

AWARDS OF MERIT.

Brassocattleya William Pitt (Bc. Digbyano-Warneri × C. Octave Doin); from H. T. Pitt, Esq., Stamford Hill (gr. Mr. Thurgood). A very pleasing result in which the two large flowers were of a uniform bright rose-pink colour, the expansive labellum deeply fringed with a yellowish throat and disc.

Cypripedium Gwen Dixon; from Leonard Dixon, Esq., Pitlochrie, St. Albans. A delightful flower of the albino section. The tall dorsal sepal pure-white, except for a small green area at the base, the petals and ventral sepal light yellowish-green, and the neatly formed labellum of bright greenish-yellow. The parentage is unrecorded, but it was obtained by crossing a Cypripedium known in the Walton Grange collection as Golden Gem.

Cypripedium Linda (Bianca × Moonbeam); from Messrs. Cowan & Co. Although by no means a large flower, this novelty has peculiar attractions, being exceedingly well formed and almost globular in shape. The dorsal sepal white, with a greenish-yellow base, and faintly marked with dotted lines; sepals and lip greenish, stained with yellow.

Cattleya Our Prince var. aurea (aurea × King George); from Messrs. Flory and Black. A handsome hybrid having the sepals and broad petals of clear golden-yellow, the labellum reddish-crimson with aurea-like markings of reddish-crimson, the stiff and erect petals giving a fine appearance.

Brassocattleya Alma, Charlesworth's var. (Bc. Mrs. J. Leemann × C. Octave Doin); from Messrs. Charlesworth & Co. A beautiful result in which the flowers are large, delicately-coloured with creamy-yellow, the immense labellum fringed, and tinged with rose on the margin.

Baron Bruno Schröder, Englefield Green, Surrey, was awarded a Silver-gilt Flora Medal, with a Silver-gilt Lindley Medal to his grower, Mr. J. E. Shill, for a superb group of Calanthe Harrisii. Upwards of 130 grand specimen plants were staged, and the tall, erect spikes, mostly carrying as many as fifty flowers and buds, made a very imposing sight. Some of the bulbs had produced three spikes, but only one had been allowed to develope, the flowers in every example being of thick texture and pure white.

Messrs. Cowan & Co., Southgate, were awarded a Silver Flora Medal for an attractive exhibit containing a fine variety of Cattleya Tityus, with two immense flowers, the handsome Læliocattleya Cornelius, also Lc. Tamar, of rose-pink colour with the lip deeply frilled. Numerous Cypripediums, among them being Thalia, Aquila, Joyce Hanmer, and albinos of the insigne section, were all in excellent form. A richly-coloured variety of Odontioda Beryl and Cymbidium, erythrostylum with a spike of seven flowers, were also noticed, as well as Lc. Robertsoniæ, clear yellow with a pretty lip, and Lc. Ophir, in which the segments were very distinctly veined.

Sir Jeremiah Colman, Bart., Gatton Park, Surrey (gr. Mr. J. Collier), exhibited a dozen grand specimens of his blue strain of Cattleyas, including Portia cœrulea and Ariel cœrulea, as well as Blc. Antoinette, obtained by crossing Bl. Helen with C. Portia cœrulea, and in which the bluish tinge is more apparent when viewed at a slight distance from the plant.

Messrs. Flory & Black staged several excellent hybrids, among them being Potinara Royal Purple, of deep ruby-crimson in all segments, a bright reddish variety of Sophrocattleya S. W. Flory, Læliocattleya Carmencita, with yellow sepals and petals, and a pleasing yellow variety of Cattleya Our Prince, a companion to the one that received an award. Cypripediums were represented by Dainty and Upton Gem.

Messrs. Sanders staged Brassocattleya Crofutiana, of a delicate pink tint, and Læliocattleya Princess Mary (C. King George × Lc. Thyone), with buff yellow segments, the lip deep crimson.

Messrs Armstrong and Brown exhibited Cattleya Portia, Orchidhurst var., with a grand spike of eleven large flowers of rosy-mauve colour. Also Cattleya labiata alba var., Princess of Wales, with a spike of three well developed flowers.

H. T. Pitt, Esq., exhibited Odontoglossum St. George, a fine variety carrying eight richly-blotched flowers.

MANCHESTER ORCHID SOCIETY.

(*Continued from p.* 352).

FIRST-CLASS CERTIFICATES.

Oda. Renown, large flower, reddish-brown with light tips, and Lc. J. Ansaldo magnifica, large well-set flower of even colour with deep crimson lip; from S. Gratrix, Esq.

Brassocattleya British Queen, a grand flower, probably the best of the type yet seen; and Od. Fabia, very evenly marked, from Mrs. Gratrix.

Od. crispum Fairy Queen, round flower of thick substance, white, with occasional spots; and Od. crispum xanthotes Sunstone, good shape with small yellow spots on sepals; from A. Hanmer, Esq.

Cyp. Psyche var. Daisy Bank, the finest flower of the type yet seen in the North of England; from B. J. Beckton, Esq.

Miltonia Lord Lambourne, a wonderful flower of the vexillaria type, intensely-coloured; from P. Smith, Esq.

AWARD OF MERIT.

Cattleya Venus, Stonehouse var.; from S. Gratrix, Esq.

AWARD OF APPRECIATION, FIRST-CLASS.

Od. crispum St. Elmo; from S. Gratrix, Esq.

CULTURAL CERTIFICATES.

Mr. J. Howes for Od. grande (three plants), Cattleya Venus, Stonehouse var., C. Bellona alba, Lc. luminosa, and Bc. Oberon, Sanders var.

Mr. A. Burns for Epidendrum vitellinum autumnale, Od. grande and Cattleya Portia.

October 19th, 1922.

Members of the Committee present:—A. Hanmer, Esq., (in the chair), Messrs. R. Ashworth, B. J. Beckton, A. Coningsby, J. C. Cowan, A. T. Cussons, J. Cypher, A. G. Ellwood, J. Evans, W. Giles, J. Howes, J. Jackson, A. Keeling, D. L. Thorpe, D. McLeod, E. W. Thompson, J. Whitham and H. Arthur (secretary).

S. Gratrix, Esq., was awarded a Gold Medal for a fine group, several plants in which obtained awards. Other exhibitors included P. Smith, Esq., Ashton-on-Mersey; A. Hanmer, Esq., Buxton; Dr. Craven Moore, Victoria Park; F. Hardy, Esq., Ashton-on-Mersey; Mrs. Gratrix, West Point; B. J. Beckton, Esq., Irlams-o'th-Height; Capt. W. Horridge, Bury; D. Losh Thorpe, Esq.; Messrs. Cypher & Sons, who were awarded a Silver Medal for a group of various Orchids; and Messrs. Keeling & Son.

FIRST-CLASS CERTIFICATES.

Brassolæliocattleya Amber, West Point var., grand shape, sepals and petals rich yellow, and with a fine aurea-like lip; Od. crispum Daphne, very large flower; Od. eximium Iona of fine shape and heavily blotched; Bc. Lisette, the darkest Brassocattleya yet seen; from S. Gratrix, Esq.

Cattleya Lamberhurst alba (intermedia alba × citrina), flowers creamy-white resembling the former parent, but the plant most resembles C. citrina; Lc. Daphne rotunda, a very large mauve flower, lip magenta; Od. Thwaitesiæ, Haddon House var., the finest and darkest variety of this hybrid; from P. Smith, Esq.

Cypripedium Greyi magnificum, large flower, white, with numerous small reddish-purple dots, from Mrs. Gratrix.

Cypripedium Duchess of Marlborough, broad dorsal sepal, waxy white, base bright green, petals and pouch light green shaded with brown; from B. J. Beckton, Esq.

Cypripedium Mad. Albert Fevrier, Chardwar var., a fine shaped flower of the Germaine Opoix type, but better in every way; from Dr. Craven Moore.

Od. crispum Edgemoore var., a very fine variety of the Doin type, with red blotch on lip; from A. Hanmer, Esq.

Od. St. George, Loshville var., flowers of good form and substance, heavily blotched with deep red; from D. Losh Thorpe Esq.

AWARDS OF MERIT.

Od. Radiant, Od. crispum rotundum, from A. Hanmer, Esq.

Lc. Athene var. purpureum, Sophrocattleya Boltonii, from P. Smith Esq.

Cyp. Henry Elwes, from Dr. Craven Moore.

Od. crispum Naomi, from S. Gratrix, Esq.

Cattleya Edithæ var. Stella, from Capt. W. Horridge.

AWARDS OF APPRECIATION, FIRST-CLASS.

Od. crispum Royal Lancer (Pittianum × Samuel Gratrix), from Mrs. Gratrix.

Cypripedium Catherine Hardy (Gaston Bulteel × Hera Mostyn), from Dr. Craven Moore.

CULTURAL CERTIFICATES.

Mr. C. Branch, for Od, crispum (two plants); Mr. W. Giles, for Od. Radiant; Mr. E. W. Thompson, for Cattleya Dionysius superba.

CYPRIPEDIUMS AT MESSRS. ARMSTRONG & BROWN'S, TUNBRIDGE WELLS.—Very many are in flower, and making a picture well worth seeing. Cypripediums are a special weakness of the writer, and always appeal to him, perhaps because many years ago one of the first orchids to flower with him was a Cypripedium. What a change has taken place in the character of these favourite Orchids. Those grown here are of majestic proportions, many bearing dorsal sepals undreamt of years ago: the outcome of our hybridists' talent and perseverance. Cypripedium Prince Albert measures five inches across the petals and three inches across the dorsal sepal. C. Memoria F. M. Ogilvie has the dorsal 3½ inches in width, and exists in several varieties. Others equally fine are C. Lady Dillon and C. Perseus. The tessellated foliage forms are a distinct feature, and are well represented, right away from the dark green variation to the lighter foliage of C. Maudiæ type. What may be termed the albino sections are in great force, these including C. Boltonii, C. Venus, C. Cupid, C. callosum Sanderæ, C. Helen II. var. Fascinator, and various crosses of C. bellatulum. Yellow Cypripediums are extensively cultivated, and include all the best varieties. C. Fairrieanum crosses are shown in old and new varieties, all characteristic of this charming species.—H.A.F.

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